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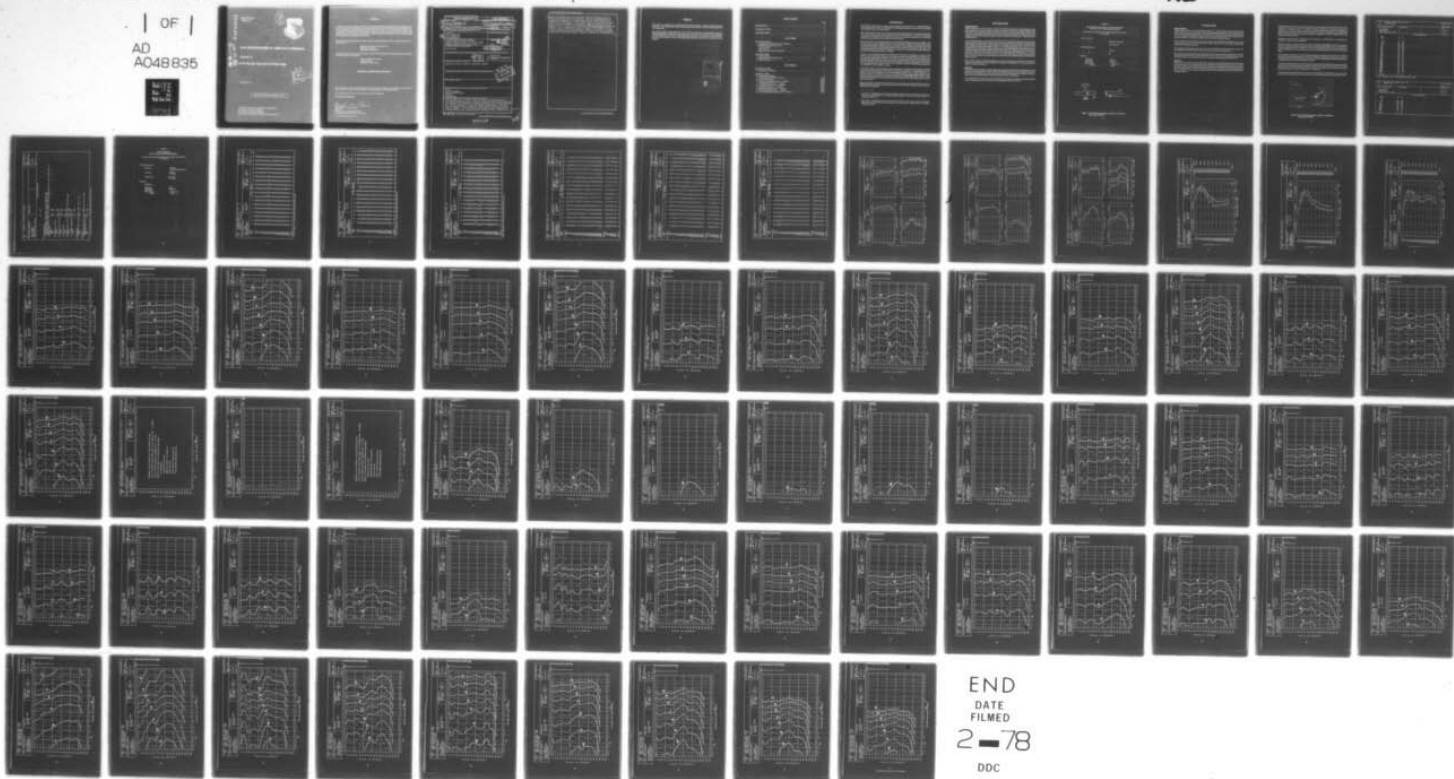
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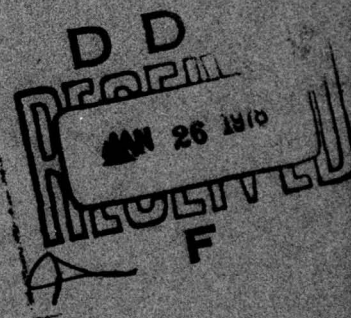


USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK

Volume 77

A-1E Aircraft, Near and Far-Field Noise

FEBRUARY 1977



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AEROSPACE MEDICAL RESEARCH LABORATORY
AEROSPACE MEDICAL DIVISION
AIR FORCE SYSTEMS COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

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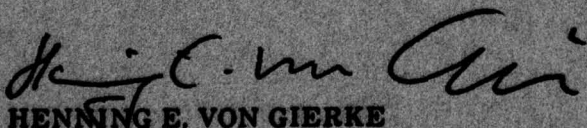
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FOR THE COMMANDER



HENNING E. VON GIERKE
Director
Biodynamics and Bionics Division
Aerospace Medical Research Laboratory

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The USAF A-1E is a tactical close air support aircraft powered by an R3350-26WD reciprocating engine. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating on a concrete runup pad for three engine/power configurations. Near-field data are reported for two locations in a wide variety of physical and psycho-acoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise			

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level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 50-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distances from the source. Refer to Volume 1 of this handbook, 'USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application', AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc. ↑

PREFACE

This report was prepared by the Biodynamic Environment Branch, Aerospace Medical Research Laboratory, under Project/Task 723104, Measurement and Prediction of Noise Environments of Air Force Operations.

The author gratefully acknowledges Mr. John Cole for his assistance in preparing this report, Mr. Robert England for his assistance in acquiring the raw data, Mr. Keith Kettler, Mr. Henry Mohlman and Mr. David Eilerman of the University of Dayton for assistance in the mechanics of data processing, and Mrs. Norma Peachey and Mr. Mike Patterson for assistance in typing and preparation of the graphics.

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INTRODUCTION

The USAF A-1E Skyraider is a tactical close-air-support aircraft powered by an R3350-26WD reciprocating engine. The aircraft was manufactured by McDonnell Douglas and the engine by the Wright Aeronautical Division of Curtiss Wright.

This volume provides measured and extrapolated data defining bioacoustic environments produced by this aircraft during ground runup operations. Such data are essential to evaluate ear protection requirements, limiting personnel exposure times, voice communication capabilities, and annoyance problems associated with ground runups of the A-1E aircraft.

This volume is one of a series published by the Aerospace Medical Research Laboratory (AMRL) under the same report number (AMRL-TR-75-50) as a multi-volume handbook that quantifies the noise environments produced at flight/ground crew locations and in surrounding communities by operations of Air Force aircraft and ground support equipment. The far-field, community-type, noise data in the handbook describe the noise produced during *ground operations* of aircraft, ground support equipment, and other ground-based equipment or facilities.

Volume 1 of this handbook discusses the objectives and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc. Volume 2 provides a method and data for adjusting the handbook's far-field noise data, which are for standard meteorological conditions (15°C temperature, 70% rel humidity, 0.760 meters Hg barometric pressure), to derive comparable data for other meteorological conditions. *Refer to Volumes 1 and 2* (references 2 and 3) for such information because it is not repeated in other handbook volumes.

A cumulative index lists those aerospace systems contained in the handbook, and identifies the specific volumes containing each type of environmental noise data available (i.e., inflight/flight crew and passenger noise, near-field/ground crew noise, far-field/community noise). Volume numbers are assigned sequentially as individual volumes are published. This index is periodically updated as individual volumes are published and is available upon request from AMRL/BBE, Wright-Patterson AFB, OH 45433. Organizations on the distribution list for the handbook will automatically receive a copy of each updated index.

Direct any questions concerning the technical data in this report and other handbook volumes to: AMRL/BBE, Wright-Patterson AFB, OH 45433; AUTOVON 78-53675 or 78-53664; Commercial (513) 255-3675 or (513) 255-3664.

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1. Cole, John N., *USAF Bioenvironmental Noise Data Handbook Volume 1: Organization, Content and Application*, AMRL-TR-75-50 (1), Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975.
 2. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 2: Procedure to Evaluate Effects of Non-standard Meteorological Conditions on Far-Field Noise*, AMRL-TR-75-50 (2), AMRL, WPAFB, OH, 1975.

NEAR-FIELD NOISE

MEASUREMENTS

AMRL acquired near-field noise data on the A-1E aircraft during ground runup operations of its reciprocating engine. For these tests the aircraft was located on a concrete runup pad at Hurlburt Field, Eglin AFB, with no significant reflecting surfaces in the vicinity except the ground plane. Table 1 gives the surface meteorological conditions and the engine condition. The ground-crew chief selected power conditions and near-field locations generally used during routine maintenance or engine runup for preflight checks.

At each near-field location a test engineer randomly moved a hand-held microphone in and around each location, probing all areas where a crew member's head would normally be located. He recorded all the noise samples on magnetic tape. During analysis of each sample, he determined the one-third octave band root-mean-square sound pressure using a 4- or 8-second integration time to derive a power-averaged level for each location. Figure 1 shows the two near-field locations where ground crews are usually located for maintenance and/or preflight checkout operations. Estimates of noise levels at other locations are difficult in the near-field since the noise source is spatially distributed, i.e., not a point source. The noise levels at near-field locations can vary widely depending upon relative distances from each noise source (intake noise, exhaust noise, panel resonances, internal engine noise through the engine wall, etc.).

Table 1 lists the numeric/alphabetic designators used on the data pages in this report to identify the measurement locations and test conditions. For example, the designator 1/A means ground crew location 1 and test condition A.

RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced by the A-1E aircraft at the two ground crew locations. This table includes the overall, 1/3 octave band, and octave band levels. From these data one can calculate the variety of measures given in Table 3, which are widely used to assess the effects of noise on personnel and their performance.

All near-field data are for the meteorological conditions at the time of test but are valid for all typical airbase meteorology because of the short sound propagation distances involved.

TABLE 1

MEASUREMENT LOCATIONS AND TEST CONDITIONS
FOR NEAR-FIELD NOISE MEASUREMENTS

A-1E Aircraft, Ground Runup, Hurlburt Field, Eglin AFB, 6 Aug 1971
Tail # 52436

Ground Crew Location

- | | |
|---|--------------------------|
| 1 | Engine Start, Fire Guard |
| 2 | Wheel Chock Pull |

Aircraft Engine Operation

- | | |
|---|------------|
| A | Taxi Power |
| B | Idle |

Meteorology

Temperature	28.9 C
Bar Pressure	0.763 M Hg
Rel Humidity	73 %
Wind — Speed	1.5 M/Sec (3 kt)
— Direction	55 Deg

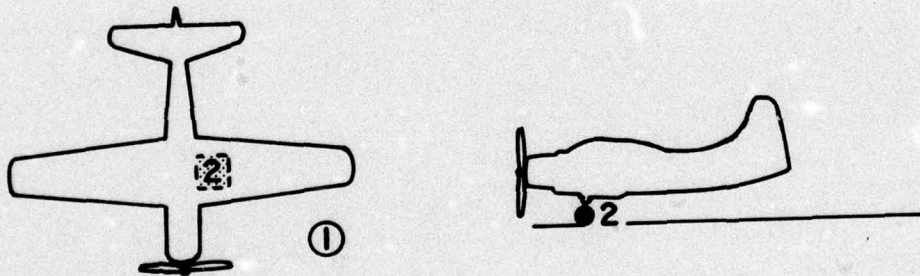


Figure 1. Near-Field Measurement Locations at Hurlburt
Field, Eglin AFB FL

FAR-FIELD NOISE

MEASUREMENTS

AMRL acquired both near- and far-field data during a 1- 2-hour test period, thus keeping similar meteorological conditions. Figure 2 shows the ground runup pads, ground cover, aircraft orientation and the 19 microphone measurement sites on the semicircle. The center of the 30 meter radius semicircle used in surveying the R3350-26WD engine was on the ground directly below the intersection of the aircraft's centerline and the plane passing through the engine's propeller plane.

Table 4 provides cockpit readouts of some engines characteristics (RPM and manifold pressure) for each power setting used in the far-field tests. Also listed in this table are the surface meteorological conditions during data acquisition.

All microphone measurement sites are in the acoustic far-field of the source where the sound wavefronts spherically diverge and the noise source may be regarded as a point source.

Test personnel acquired far-field noise data at Eglin AFB by using a hand-held microphone (1.7 meters/ 5½ feet above the ground plane and pointed at the source, 0° incidence) and sequentially recording 5 to 10 seconds of data at each far-field location on a portable microphone/tape recorder system.

RESULTS

Table 5 lists the overall and 1/3 octave band SPL measured at the far-field locations under meteorological conditions at the time of the test. Data in all other figures and tables are based on these levels. These data were normalized to 100 meters distance and standard meteorological conditions (15°C temperature, 70% relative humidity, 0.760 meter Hg barometric pressure) and used to derive the graphic data in Figure 3, which provides a compact summary of the far-field noise characteristics of the A-1E aircraft in a standard format.

Figure 4 and Table 6 present two acoustic measures, the acoustic power levels and the directivity index, respectively. The acoustic power level describes the power radiated by the source as a function of frequency. The directivity index is a standard acoustical engineering measure that describes the geometric way in which the source radiates this power as a function of both frequency and angle from source. These basic source measures are primarily of interest for acoustical engineers and noise generation/control specialists.

Estimates of noise levels for intermediate power settings (e.g., 1800 RPM) can be determined as explained in Volume 1 of this handbook.

Figures 5 through 11 are sets of equal noise contours describing seven different measures of noise as a function of angle and distance from the source for standard day meteorology. They are, respectively, overall sound pressure level, C-weighted sound level, A-weighted sound level, perceived noise level, speech interference level, permissible exposure times for personnel and octave band sound pressure levels.

Data excessively influenced by spurious background/electronic noise were eliminated from all figures and tables. No data are presented at the 170 and/or 180 degree locations for the highest power settings because of turbulent air flow behind the aircraft. Typically, the A-weighted levels for these angles are 10 to 20 dBA below the level at the 160 degree location.

Test personnel performed noise surveys during quiet periods when the background noise was minimal, e.g., early in the morning when no other aircraft or engine test stands were operating. Data eliminated because they were near the background/electronic noise were generally not significant because the levels were so low (e.g., Table 5 and Figure 11 at 1200 RPM).

Volume 2 of the handbook describes the influence of meteorology on far-field noise environments, and provides, if required, the factors necessary to adjust the handbook's standard meteorological day data.

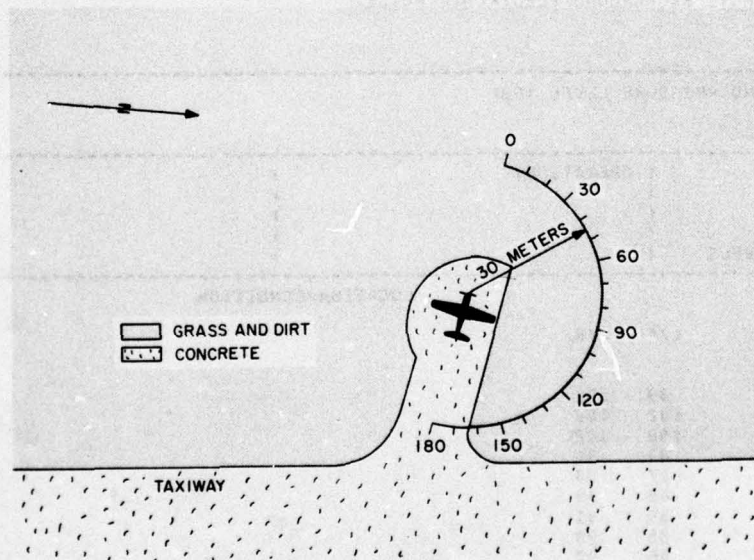


Figure 2. Far-Field Measurement Locations at Hurlburt Field, Eglin AFB FL

TABLE:	MEASURED SOUND PRESSURE LEVEL (DB)	IDENTIFICATION:
2	1/3 OCTAVE BAND	OMEGA 3.2
NOISE SOURCE/SUBJECT:	OPERATION:	TEST 71-019-001
A-1E AIRCRAFT		RUN 01
GROUND CREW		04 DEC 74
NEAR FIELD NOISE LEVELS		PAGE F1

LOCATION/CONDITION		
FREQ (HZ)	1/A	2/B
25	72	95
31.5	83	91
40	88	100
50	91	99
63	99	106
80	98	101
100	97	100
125	95	97
160	90	90
200	85	86
250	83	88
315	83	91
400	81	90
500	82	87
630	83	86
800	82	84
1000	80	84
1250	80	85
1600	81	86
2000	80	87
2500	81	87
3150	79	85
4000	83	85
5000	81	85
6300	81	88
8000	82	89
10000	80	87
OVERALL	104	110

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE:	MEASURED SOUND PRESSURE LEVEL (DB)	IDENTIFICATION:
2	OCTAVE BAND	OMEGA 3.2
NOISE SOURCE/SUBJECT:	OPERATION:	TEST 71-019-001
A-1E AIRCRAFT		RUN 01
GROUND CREW		04 DEC 74
NEAR FIELD NOISE LEVELS		PAGE J1

LOCATION/CONDITION		
FREQ (HZ)	1/A	2/B
31.5	89	102
63	102	108
125	100	102
250	88	94
500	87	93
1000	85	89
2000	85	91
4000	86	90
8000	86	93
OVERALL	104	110

TABLE#	MEASURES OF HUMAN NOISE EXPOSURE	IDENTIFICATION#
3		
NOISE SOURCE/SUBJECT:	OPERATION:	OMEGA 3.2 TEST 71-019-001 RUN 01
A-1E AIRCRAFT	(
GROUND CREW	(
NEAR FIELD NOISE LEVELS	(04 DEC 74
	(PAGE H1
	1/A 2/B	
HAZARD/PROTECTION		
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DBC) AT EAR		
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DBA) AT EAR		
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)		
NO PROTECTION		
OASLC	104 109	
OASLA	93 98	
T	101 42	
MINIMUM QPL EAR MUFFS		
OASLA*	81 85	
T	807 404	
AMERICAN OPTICAL 1700 EAR MUFFS		
OASLA*	77 82	
T	960 679	
V-51R EAR PLUGS		
OASLA*	69 74	
T	960 960	
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS		
OASLA*	59 64	
T	960 960	
H-133 GROUND COMMUNICATION UNIT		
OASLA*	71 76	
T	960 960	
COMMUNICATION		
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)		
PSIL	86 91	
ANNOYANCE		
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNOB)		
TONE CORRECTION (C IN DB)		
PNLT	110 114	
C	6 0	

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE 4

**TEST CONDITIONS
FOR FAR-FIELD NOISE MEASUREMENTS**

**A-1E Aircraft, Ground Runup, Hurlburt Field, Eglin AFB, 6 Aug 1971
Tail # 52436**

Aircraft Engine Operation

Idle Power	650 RPM 22 Inches Manifold Pressure
Taxi Power	1200 RPM 20" MAP
Military Power	2800 RPM 52.5" MAP

Meteorology

Meteorology

Temperature	28.9 C
Bar Pressure	0.763 M Hg
Rel Humidity	73 %
Wind — Speed	1.5 M/Sec (3 kt)
— Direction	55 Deg

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																			
1/3 OCTAVE BAND																			
DISTANCE = 30 METERS																			
NOISE SOURCE/SUBJECT:																			
(OPERATION:)																			
(A-1E AIRCRAFT)																			
(R-3350-26WD ENGINE)																			
(FAR FIELD NOISE)																			
METEOROLOGY: TEMP = 29 C																			
BAR PRESS = .763 M HG																			
REL HUMID = 73 %																			
IDENTIFICATION: OMEGA 1.4																			
TEST 75-002-001																			
RUN 01																			
05 MAY 75																			
PAGE 2																			
FREQ (HZ)																			
ANGLE (DEGREES)																			
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25	69<	72<	71<	74<	72<	68<	70<	69<	73<	71<	73<	72<	76<	74<	72<	71<	78	72<	
31.5	75<	74<	73<	77<	77<	75<	74<	77	77	76<	78	76<	78	79	76<	76<	79	76<	
40	80	83	79	81	82	81	82	82	81	83	82	83	83	83	83	81	83	80	
50	81	83	82	82	83	82	84	81	83	84	84	85	85	85	84	83	77	78	
63	80	81	82	84	85	84	86	85	86	86	87	87	87	88	87	86	82	81	
80	80	82	81	82	82	83	82	81	81	81	82	81	82	83	82	83	82	81	
100	82	83	82	81	82	83	84	82	84	83	83	84	84	86	85	85	84	83	
125	81	81	80	80	80	79	80	80	79	78	78	79	79	83	81	79	81	80	
160	79	79	79	78	78	77	77	77	79	78	76	78	78	82	80	79	80	78	
200	74	72<	75	75	74	71<	73	72<	71<	72<	73	75	74	77	75	75	76	76	
250	69<	67<	69<	68<	68<	67<	69<	66<	67<	66<	67<	68<	68<	71	69<	70	74	72	
315	66	65	66	65	66	64<	70	67	67	68	64<	67	67	68	68	68	71	69	
400	66	66	68	66	68	67	72	70	71	73	70	70	70	70	71	70	72	70	
500	67	66	66	67	69	67	71	68	69	71	70	68	68	70	70	71	71	72	
630	64	62	62	64	62	62	64	61	60	63	64	63	63	64	66	69	68	69	
800	61	62	62	65	63	60	63	64	61	62	63	65	63	67	66	63	65	61	
1000	62	61	61	66	62	62	63	64	62	61	63	64	63	65	65	65	63	61	
1250	62	60	60	65	59	60	64	64	63	63	66	65	63	66	65	62	61	59	
1600	61	60	60	63	62	61	66	64	63	66	66	62	62	66	65	65	63	63	
2000	61	60	62	63	61	62	65	65	63	67	66	65	64	66	67	66	62	62	
2500	60	60	61	64	61	62	66	67	66	67	66	63	63	67	64	65	63	63	
3150	57	59	58	63	61	61	64	67	67	67	61	60	64	62	61	61	61	59	
4000	56	57	57	62	59	59	64	66	68	68	68	61	60	60	62	61	61	59	
5000	55	56	56	59	59	60	63	67	66	68	67	62	60	60	60	59	58	56	
6300	56	57	57	58	59	61	64	67	68	70	67	61	64	61	63	61	60	58	
8000	55	57	58	58	60	61	65	70	71	71	67	63	63	62	63	63	62	59	
10000	53	55	54	55	58	59	63	68	68	69	66	62	60	63	60	61	58	57	
OVERALL	89	90	90	90	91	91	92	90	91	92	92	92	92	93	93	92	91	89	
< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE																			

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																			IDENTIFICATIONS	
1/3 OCTAVE BAND																				
5																			OMEGA 1.4	
DISTANCE = 30 METERS																			TEST 75-002-001	
NOISE SOURCE/SUBJECT:																			RUN 02	
(OPERATION:																				
(1200 RPM																				
(A-1E AIRCRAFT																				
(R-3350-26MD ENGINE																			05 MAY 75	
(FAR FIELD NOISE																				
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< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																			
1/3 OCTAVE BAND																			
DISTANCE = 30 METERS																			
NOISE SOURCE/SUBJECT:																			
(OPERATION:)																			
(A-1E AIRCRAFT)																			
(R-3350-26WD ENGINE)																			
(FAR FIELD NOISE)																			
MILITARY POWER																			
(2890 RPM)																			
TEMP = 29 C																			
BAR PRESS = .763 M HG																			
REL HUMID = 73 %																			
IDENTIFICATION:																			
OMEGA 1.4																			
TEST 75-002-001																			
RUN 03																			
05 MAY 75																			
PAGE 2																			
ANGLE (DEGREES)																			
FREQ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
(HZ)																			
25	82	80	84	87	88	88	90	91	93	94	95	95	96	96	92	86	87		
31.5	81	81	81	82	81	82	82	85	84	85	85	85	84	86	85	84	89		
40	87	89	90	92	92	93	93	94	95	96	97	97	97	97	98	99	91		
50	88	90	95	99	100	99	101	103	103	104	105	106	106	106	101	87	88		
63	89	92	95	99	100	102	101	101	101	102	104	106	107	105	106	101	94		
80	96	96	102	103	109	109	107	112	116	118	119	118	117	111	106	102	97		
100	96	96	98	98	98	99	98	99	102	104	105	105	105	105	102	103	97		
125	99	95	94	94	97	100	101	100	96	98	99	102	104	103	104	102	99		
160	105	111	106	100	104	102	98	107	115	118	117	115	114	114	114	110	91		
200	96	100	100	96	98	94	97	97	100	103	104	103	104	105	102	102	98		
250	96	101	100	102	101	97	95	105	106	103	105	111	111	112	107	105	88		
315	97	97	97	98	100	100	99	99	106	107	103	107	109	108	107	104	91		
400	102	96	104	102	101	100	101	102	106	106	105	106	107	108	105	104	88		
500	104	99	100	102	101	101	104	104	105	105	103	100	104	108	102	103	90		
630	97	99	99	97	97	98	100	99	100	101	101	99	103	103	102	100	88		
800	99	95	99	99	99	97	97	101	102	103	103	102	104	105	104	99	85		
1000	97	96	96	97	97	97	99	100	101	103	101	103	103	103	101	97	87		
1250	98	96	97	97	98	98	101	103	104	106	104	105	103	103	102	97	88		
1600	99	97	98	99	100	99	101	103	107	109	107	102	103	103	101	96	88		
2000	102	100	100	100	101	100	103	106	108	110	109	105	105	103	102	97	87		
2500	100	98	101	101	101	100	102	105	106	109	107	105	105	103	102	96	87		
3150	100	97	99	100	100	99	102	105	106	108	107	103	103	101	101	95	83		
4000	100	98	100	101	101	101	103	106	107	109	107	103	103	103	100	94	83		
5000	98	95	98	99	100	98	101	104	104	106	104	101	101	100	97	91	80		
6300	97	94	97	98	99	98	101	102	104	105	103	100	180	99	96	89	79		
8000	96	93	96	97	98	98	100	102	103	105	102	99	99	97	94	88	78		
10000	93	90	93	95	96	96	98	100	100	103	100	96	95	95	92	85	75		
OVERALL	113	114	113	113	115	114	115	118	121	123	123	122	121	120	118	115	106		

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: DIRECTIVITY INDEX (DB)																			
6																			
NOISE SOURCE/SUBJECT:										IDENTIFICATION:									
A-1E AIRCRAFT										OMEGA 1.4									
R-3350-26ND ENGINE										TEST 75-002-001									
FAR FIELD NOISE										RUN 81									
OPERATIONS:										METEOROLOGY:									
IDLE POWER										TEMP = 29 C									
650 RPM										BAR PRESS = .763 M HG									
										REL HUMID = 73 %									
										PAGE 4									
ANGLE (DEGREES)																			
FREQ (HZ)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
1/3 OCTAVE																			
25	-3	-1	-2	1	-1	-4	-3	-4	-0	-2	1	-1	4	2	-1	-2	5	-0	
31.5	-1	-3	-4	-0	-0	-2	-3	1	0	-1	1	-1	1	1	-1	-1	2	-1	
40	-2	1	-3	-1	-1	-0	-0	-0	-1	0	-0	1	1	1	0	-1	-6	-2	
50	-3	-1	-4	-2	-1	-2	1	-2	0	0	1	1	1	2	1	0	-4	-5	
63	-6	-5	-4	-2	-1	-2	-0	-1	0	-1	0	0	0	1	-0	1	0	-1	
80	-2	-0	-1	-0	0	-1	1	-1	-1	-0	-0	-1	0	2	2	2	1	1	
100	1	1	0	-0	-1	-0	0	-1	-1	-1	-1	-0	-1	3	3	1	1	0	
125	1	1	0	-0	-1	-1	-1	-1	-1	-0	-2	-0	-0	3	3	2	2	2	
160	0	-1	1	0	0	-3	0	-2	-2	-3	-1	1	-0	3	1	1	2	2	
200	-1	-1	0	-0	-1	-1	1	-2	-1	-2	-1	-1	-0	3	3	1	2	2	
250	-1	-2	-2	-4	-2	-3	3	-0	-1	-3	-1	-1	-0	1	1	1	2	2	
315	-4	-4	-3	-3	-2	-3	2	-0	-1	-2	0	-1	-1	0	0	-1	2	2	
400	-3	-3	-3	-3	-2	-2	0	-3	-4	-1	0	-1	-1	0	2	5	4	2	
500	-2	-1	-1	1	-1	-3	-1	0	-2	-1	0	-1	-1	3	3	2	2	2	
630	-1	-3	-3	3	-1	-4	0	0	-1	-2	0	0	-1	2	2	2	2	2	
800	-2	-4	-4	-1	-4	-3	0	0	-1	-1	3	-2	-1	2	1	2	4	5	
1000	-3	-4	-4	-1	-4	-3	0	0	-1	-2	0	-1	-1	2	1	1	2	3	
1250	-4	-5	-3	-2	-4	-3	1	-2	-1	-1	3	-3	-2	2	1	1	-3	-5	
1600	-5	-5	-4	-1	-4	-3	0	-0	-2	-1	2	-0	-2	1	3	1	-1	-1	
2000	-7	-6	-6	-2	-4	-3	-1	-3	1	2	3	-3	-4	-1	-1	-0	-3	-2	
2500	-8	-7	-7	-3	-6	-5	-0	-2	4	4	3	-3	-4	-5	-2	-3	-4	-5	
3150	-9	-8	-8	-5	-5	-4	-1	-3	2	4	3	-2	-4	-4	-4	-5	-6	-8	
4000	-9	-8	-8	-5	-4	-3	-1	-3	2	4	3	-2	-4	-4	-4	-4	-5	-7	
5000	-12	-10	-9	-9	-7	-6	-2	-2	3	4	3	-2	-4	-4	-4	-4	-5	-7	
6300	-11	-10	-9	-8	-7	-6	-1	-1	4	5	4	-4	-3	-4	-4	-4	-5	-7	
8000	-2	0	-3	-1	-0	-1	-1	-0	-0	0	0	0	1	1	1	-1	2	-1	
10000	-4	-2	-2	-1	-0	-1	0	-2	-0	-1	1	1	1	2	2	0	-3	-4	
OCTAVE																			
31.5	-2	0	-3	-1	-0	-1	-1	-0	-0	0	0	0	1	1	1	1	2	-1	
63	-4	-2	-2	-1	-0	-1	0	-1	0	-1	1	1	1	2	2	1	-3	-4	
125	-0	-2	0	0	-0	-3	0	-2	-0	-1	3	3	3	3	1	1	3	2	
250	-3	-3	-2	0	-0	-3	0	-2	-2	-1	0	-1	-1	-0	2	2	2	2	
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8000	-11	-9	-9	-8	-7	-6	-1	2	3	4	5	5	5	5	5	5	-5	-7	
OVERALL	-2	-1	-2	-1	-1	-1	0	-1	-0	0	0	1	1	2	1	0	-0	-2	

TABLE: DIRECTIVITY INDEX (DB)																	IDENTIFICATION:
6																	OMEGA 1.4
NOISE SOURCE/SUBJECT:																	TEST 75-082-001
A-1E AIRCRAFT																	RUN 02
R-3350-26WD ENGINE																	05 MAY 75
FAR FIELD NOISE																	PAGE 4
FREQ (HZ)																	
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180																	
1/3 OCTAVE																	
25	-0	3	-1	0	-1	-1	-1	0	-2	-0	-0	-1	2	-1	2	1	8
31.5	-1	-1	-1	-1	-2	-2	-1	-1	-1	-1	-1	-1	0	-2	-1	3	2
40	1	1	-0	1	-1	-1	-1	0	-1	1	1	1	1	-1	-1	-3	-1
50	-6	-4	-4	-2	-2	-2	0	0	0	0	0	1	2	2	0	-5	-7
63	-6	-3	-2	-2	-2	-2	0	0	0	0	0	1	2	2	-2	-5	-9
80	-1	0	0	0	0	0	1	1	0	-1	-1	0	-0	1	2	1	-1
100	-1	-0	-0	-1	-1	-1	-1	-1	-1	-1	-1	0	0	1	-1	-2	-6
125	-0	1	2	2	1	-0	-0	-1	-1	-1	-1	0	1	1	0	-3	-9
160	1	1	1	0	-2	-1	-2	2	-1	-1	-1	0	1	0	-1	-3	-6
200	-2	1	1	-1	-2	-2	-0	-2	-1	-1	-1	1	2	2	2	-0	-7
250	-2	1	1	-1	-2	-2	-0	-2	-1	-1	-1	1	1	1	1	-1	-10
315	1	-1	1	-0	-0	-1	-2	-2	-1	-2	-2	0	0	0	0	-3	-10
400	-0	-2	0	-0	-1	-1	-2	-2	-1	-2	-2	-0	1	1	1	-1	-5
500	1	2	1	1	-1	0	-1	-1	0	-1	-1	-3	0	0	0	0	-4
630	-2	1	-1	-2	-1	-1	-4	-1	-1	-1	-1	-3	3	3	3	4	-8
800	-1	-0	-1	-2	-1	-1	-4	-3	-1	-1	-1	-3	1	1	1	0	-4
1000	-2	-2	-2	-3	-1	-1	-4	-3	-1	-1	-1	-3	2	2	2	0	-6
1250	-1	-0	-2	-3	-2	-1	-4	-3	-1	-1	-1	-3	2	2	1	-1	-11
1600	-1	0	-3	-4	-2	-1	-4	-3	-1	-1	-1	-3	2	2	1	-3	-14
2000	-2	-1	-2	-4	-2	-1	-4	-3	-1	-1	-1	-3	1	1	2	-2	-9
2500	-2	-1	-2	-3	-1	-0	-4	-3	-1	-1	-1	-3	2	2	1	-2	-13
3150	-5	-3	-3	-4	-2	-1	-4	-3	-1	-1	-1	-4	-0	-0	-0	-5	-10
4000	-5	-3	-4	-4	-2	-1	-4	-3	-1	-1	-1	-4	-3	-3	-3	-7	-10
5000	-5	-2	-3	-3	-2	-1	-4	-3	-1	-1	-1	-4	-2	-2	-4	-8	-15
6300	-5	-4	-4	-4	-2	-1	-4	-3	-1	-1	-1	-4	-2	-2	-4	-10	-14
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10000	-6	-5	-4	-4	-2	-1	-4	-3	-1	-1	-1	-4	-2	-2	-4	-10	-16
OCTAVE	1	1	3	-0	2	-1	0	-2	-1	0	0	-1	1	1	1	-1	5
31.5	-4	-2	-3	-1	-1	-1	0	-2	-1	0	0	-1	0	-1	0	-1	-5
63	-1	0	1	0	-1	-1	-1	-1	-1	-1	-1	0	2	2	0	-2	-8
125	-1	0	1	0	-1	-1	-1	-1	-1	-1	-1	0	2	2	0	-2	-8
250	-1	0	1	0	-1	-1	-1	-1	-1	-1	-1	0	2	2	0	-2	-8
500	-0	-0	0	-0	-1	-1	-1	-1	-1	-1	-1	0	2	2	0	-2	-8
1000	-1	-1	-1	-2	-1	-1	-1	-1	-1	-1	-1	0	2	2	0	-2	-10
2000	-2	-1	-2	-3	-2	-1	-1	-1	-1	-1	-1	0	2	2	0	-2	-13
4000	-4	-3	-3	-4	-2	-1	-1	-1	-1	-1	-1	0	2	2	0	-2	-15
8000	-5	-4	-4	-4	-2	-1	-1	-1	-1	-1	-1	0	2	2	0	-2	-15
OVERALL	-2	-1	-1	-1	-1	-1	-0	-0	-0	-0	0	2	2	2	0	-2	-7

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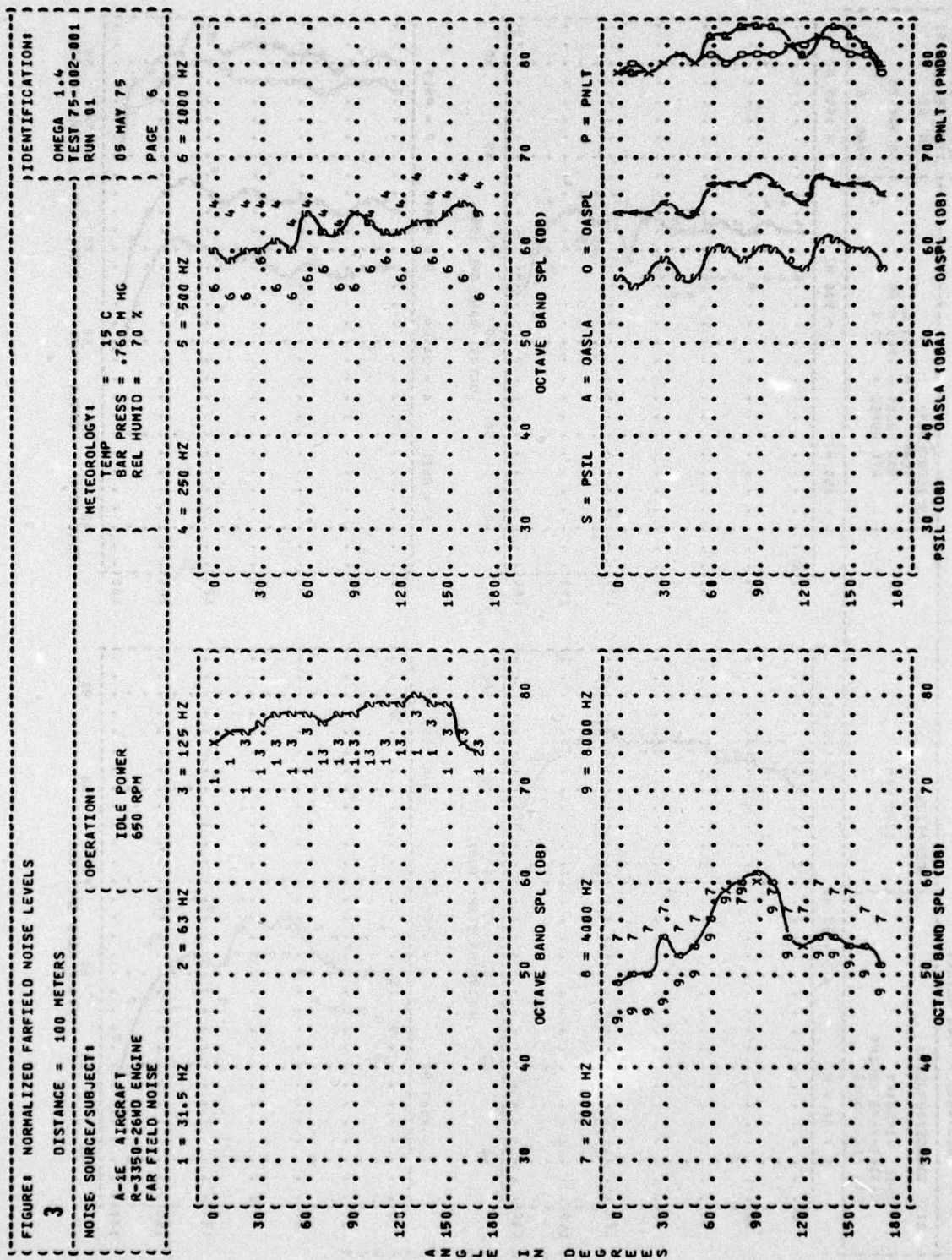


FIGURE 1 NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT:

A-1E AIRCRAFT
R-3350-26MD ENGINE
FAR FIELD NOISE

OPERATION:

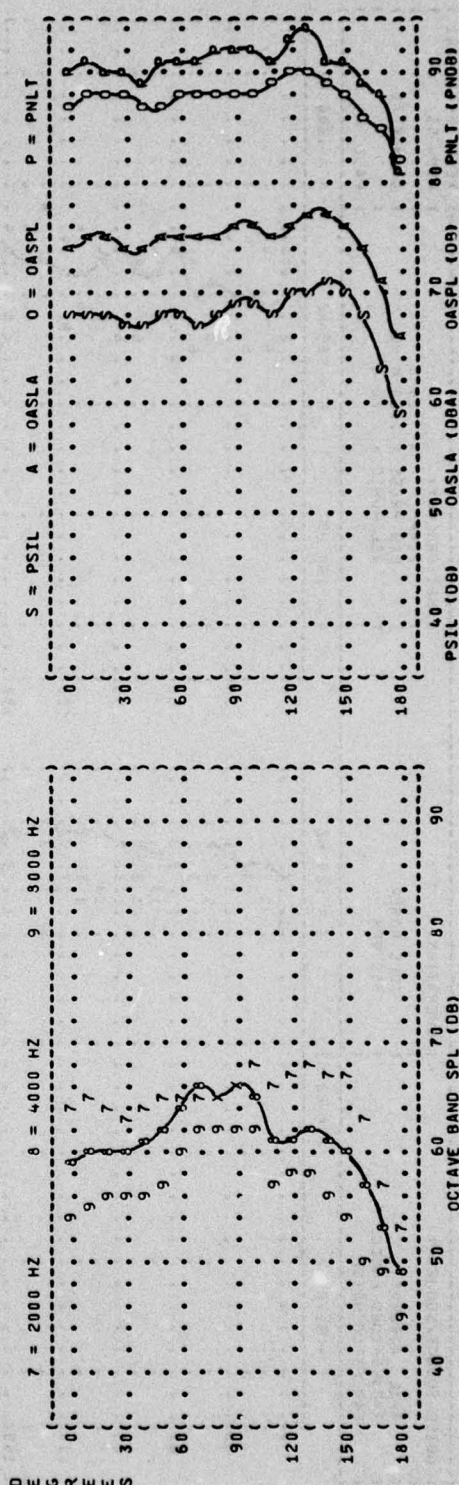
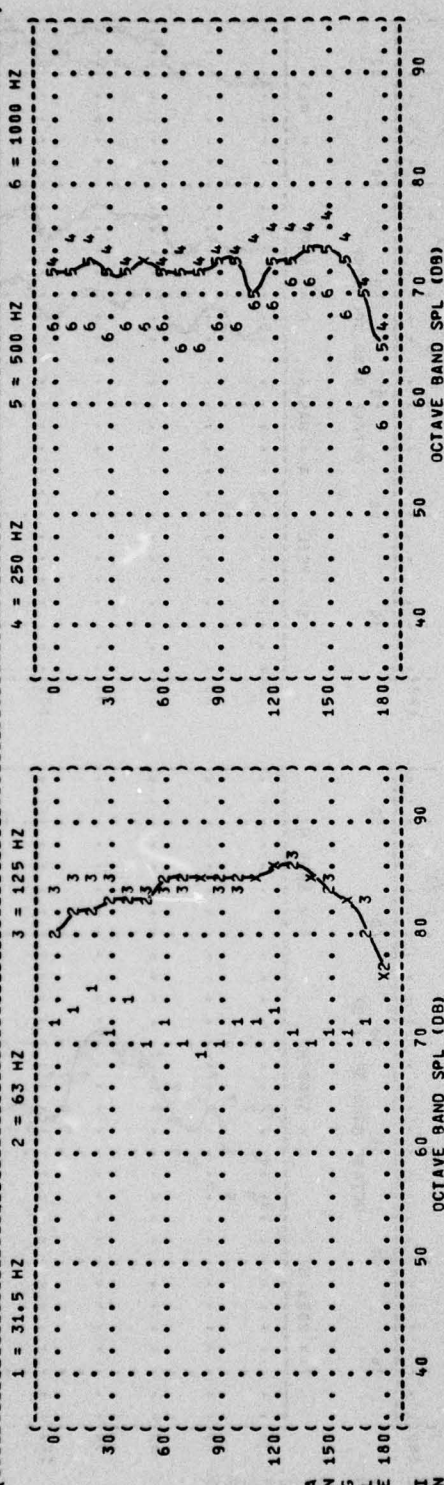
1200 RPM

METEOROLOGICAL:

TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:

OMEGA 1-4
TEST 75-002-001
RUN 02
05 MAY 75
PAGE 5

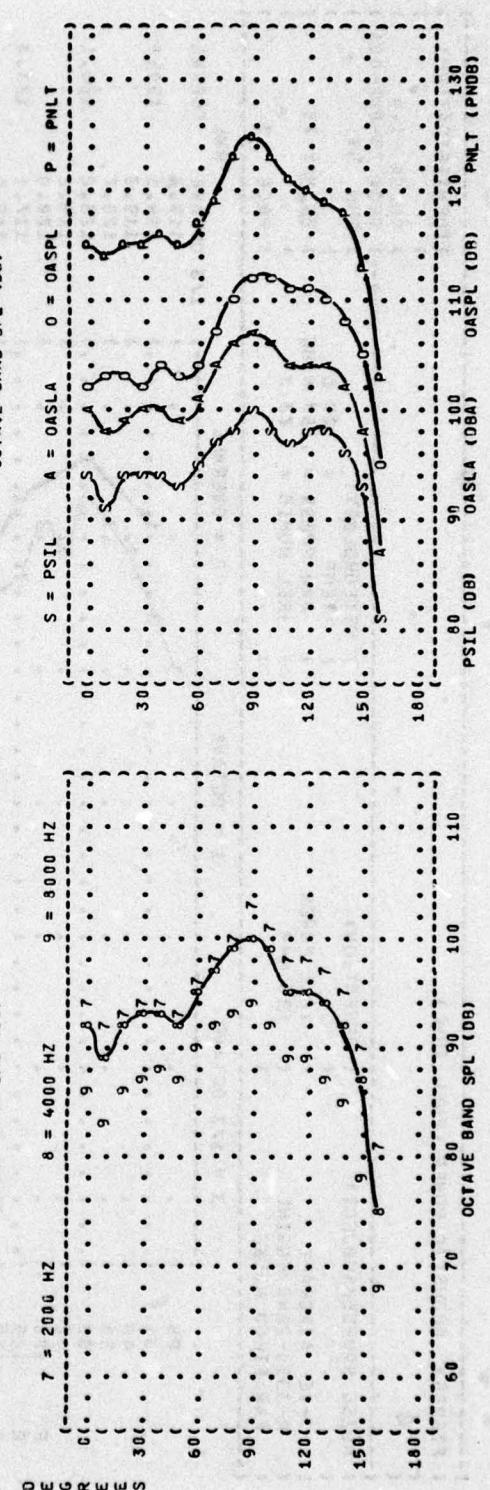
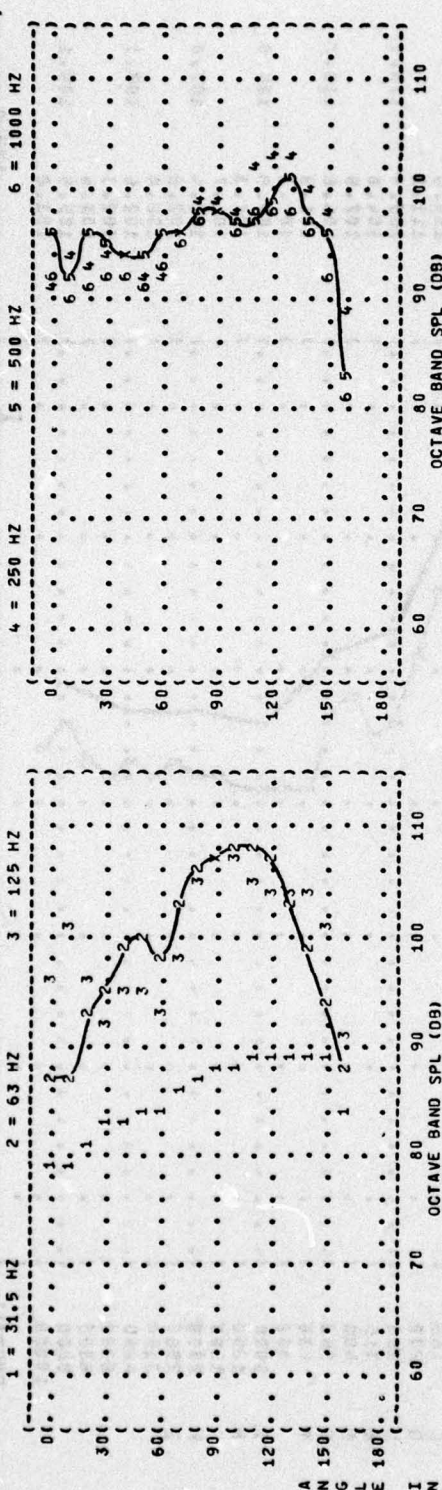


IDENTIFICATION:
 OMEGA 1.4
 TEST 75-002-001
 RUN 03
 05 MAY 75
 PAGE 6

NOISE SOURCE/SUBJECT:
 A-1E AIRCRAFT
 R-3350-26MD ENGINE
 FAR FIELD NOISE

OPERATION:
 MILITARY POWER
 2800 RPM

METEOROLOGY:
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %



A N 150
 G G
 L E 180
 I N
 D E E
 G R
 E E S

FIGURE: ACOUSTIC POWER LEVEL (PWL)

4

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-001

RUN 01

05 MAY 75

PAGE 3

NOISE SOURCE/SUBJECT:

OPERATION:

Idle Power

650 RPM

A-1E AIRCRAFT

R-3350-26MD ENGINE

FAR FIELD NOISE

METEOROLOGY:

TEMP = 29 C

BAR PRESS = .763 H HG

REL HUMID = 73 %

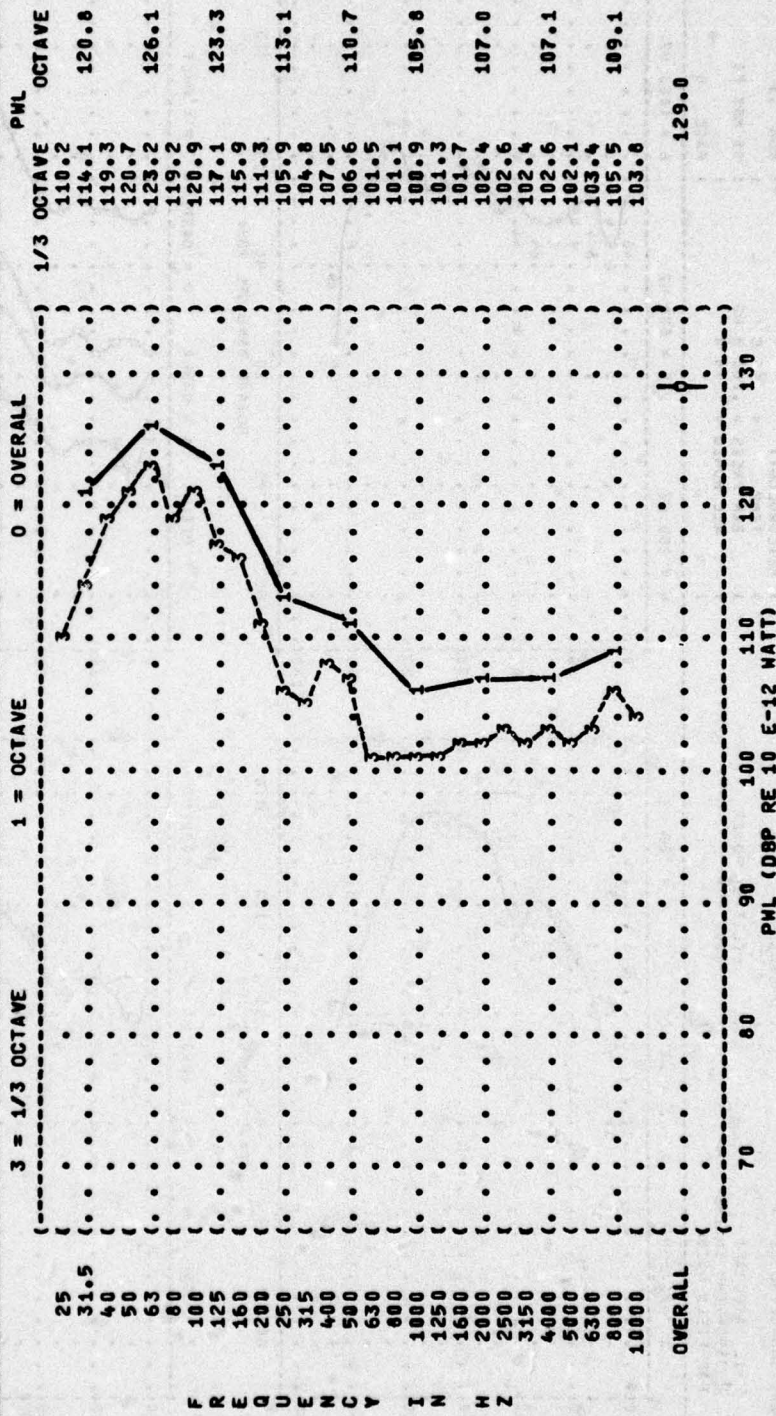


FIGURE: ACOUSTIC POWER LEVEL (PWL)

4

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-001

RUN 02

05 MAY 75

PAGE 3

NOISE SOURCE/SUBJECT:

A-1E AIRCRAFT

R-3350-26MD ENGINE

FAR FIELD NOISE

OPERATION:

1200 RPM

METEOROLOGY:

TEMP = 29 C

BAR PRESS = .763 M HG

REL HUMID = 73 %

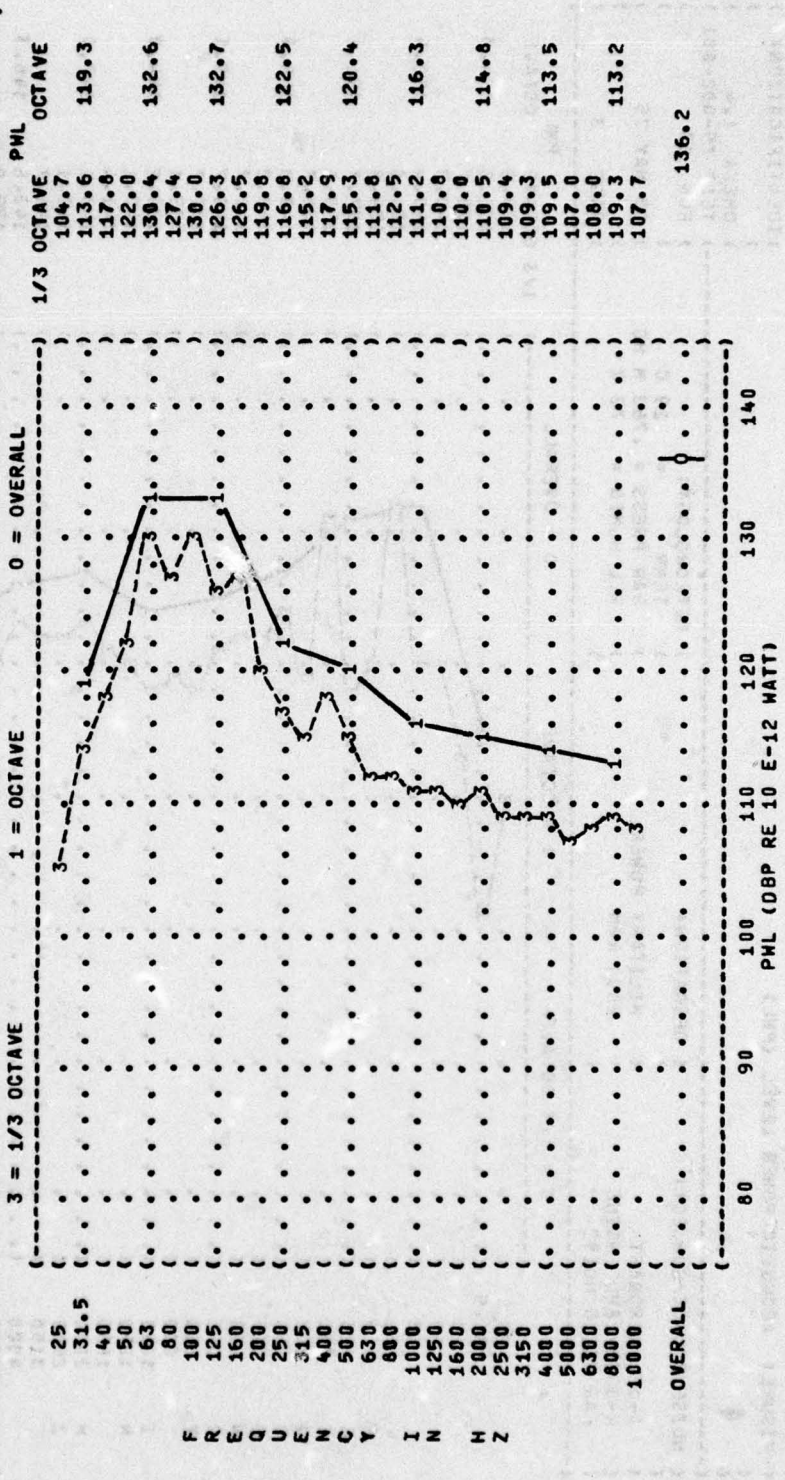


FIGURE: ACOUSTIC POWER LEVEL (PWL)

4

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-001

RUN 03

05 MAY 75

PAGE 3

NOISE SOURCE/SUBJECT:

OPERATION:

METEOROLOGY:

TEMP = 29 C

MILITARY POWER

BAR PRESS = .763 M HG

2800 RPM

REL HUMID = 73 %

A-1E AIRCRAFT

R-3350-26MD ENGINE

FAR FIELD NOISE

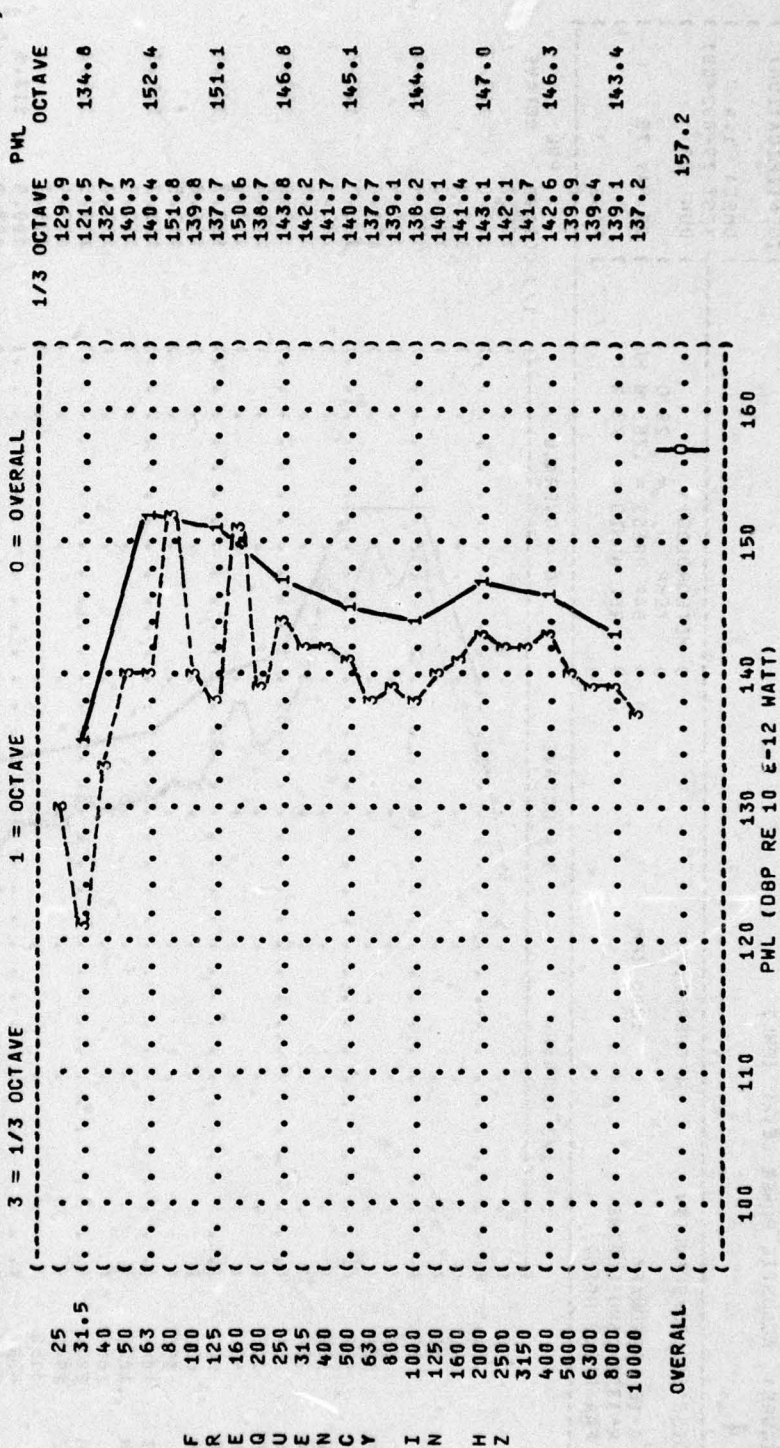
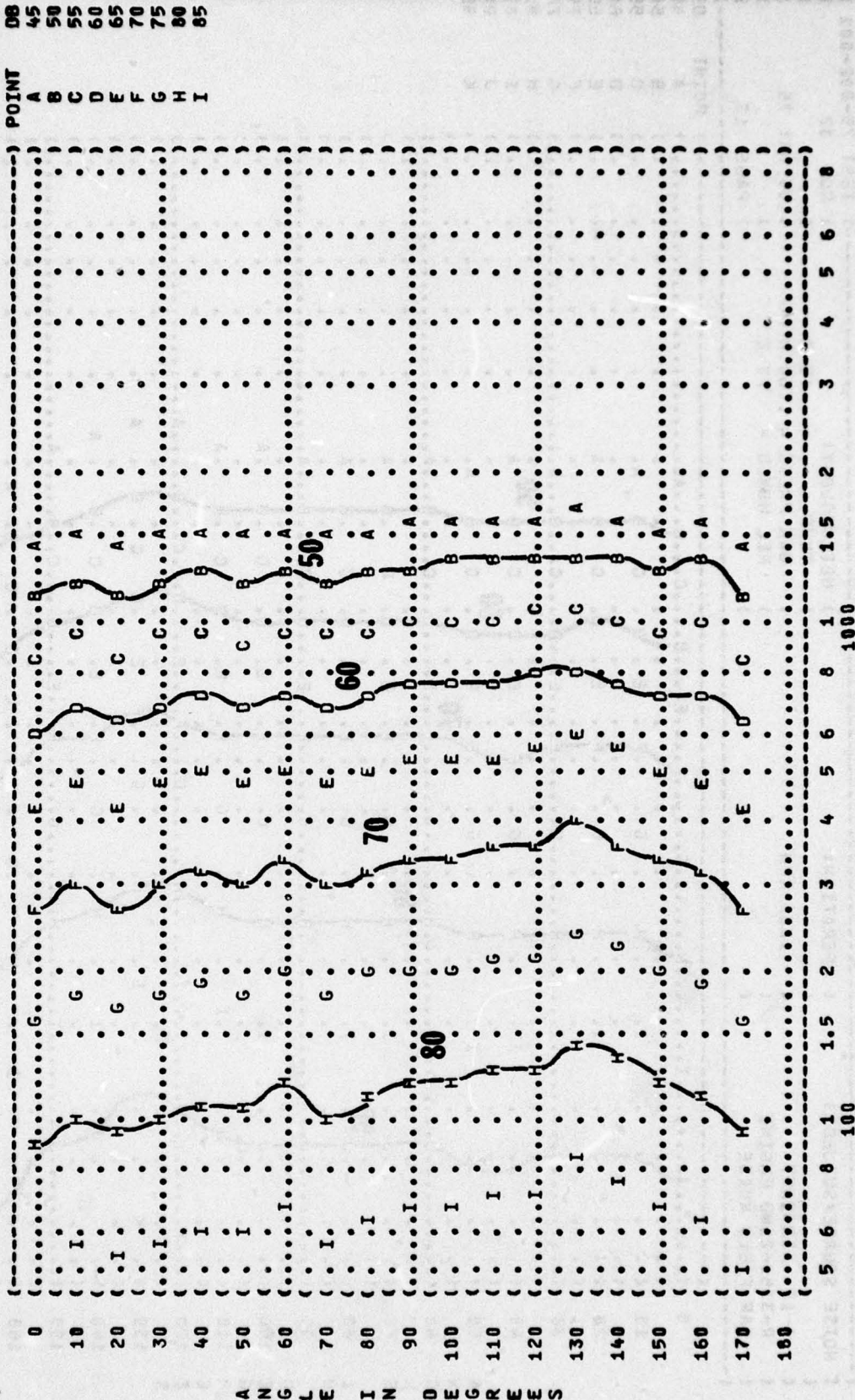
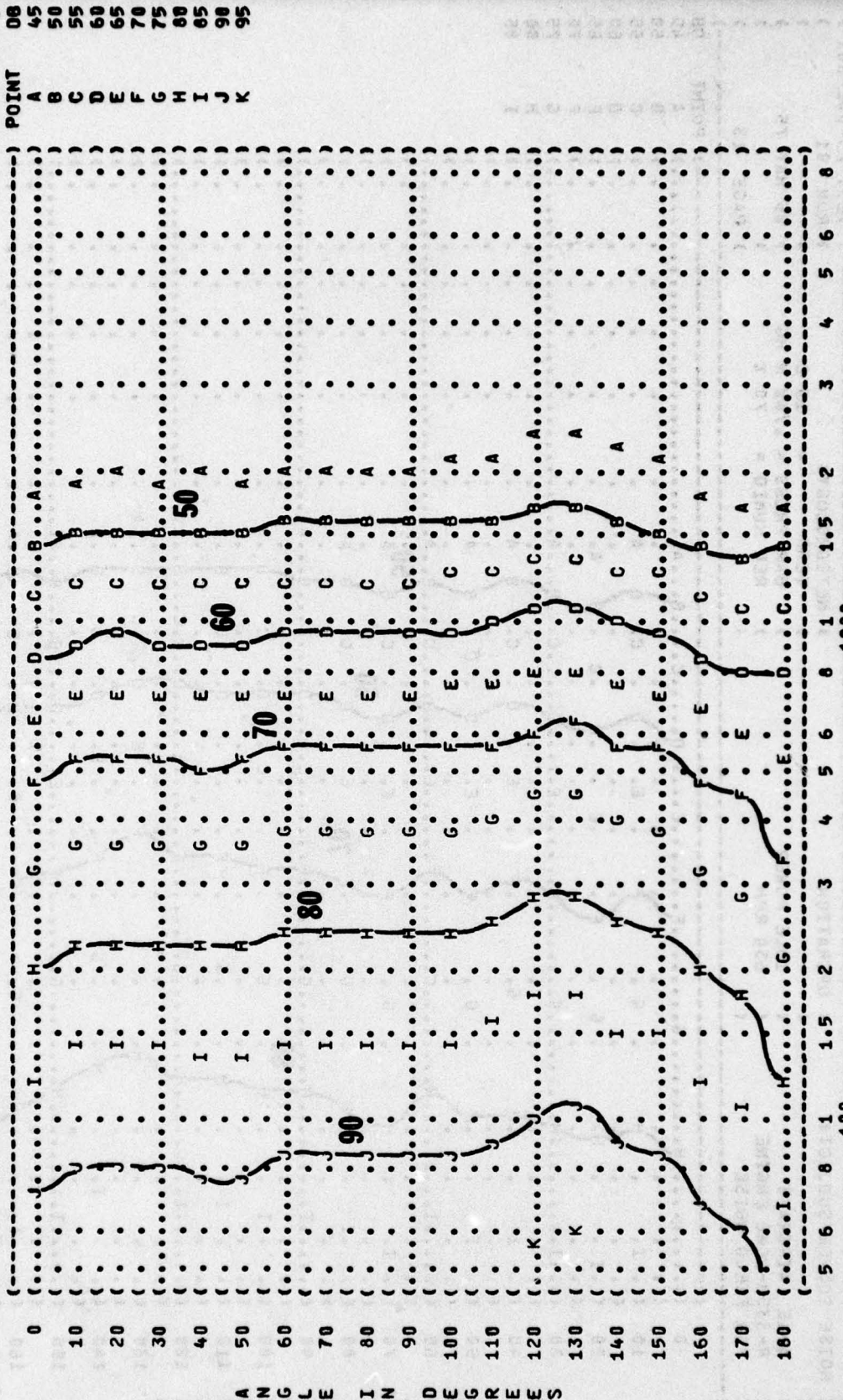


FIGURE 1: OVERALL SOUND PRESSURE LEVEL (OASPL)
EQUAL LEVEL CONTOURS (DB)

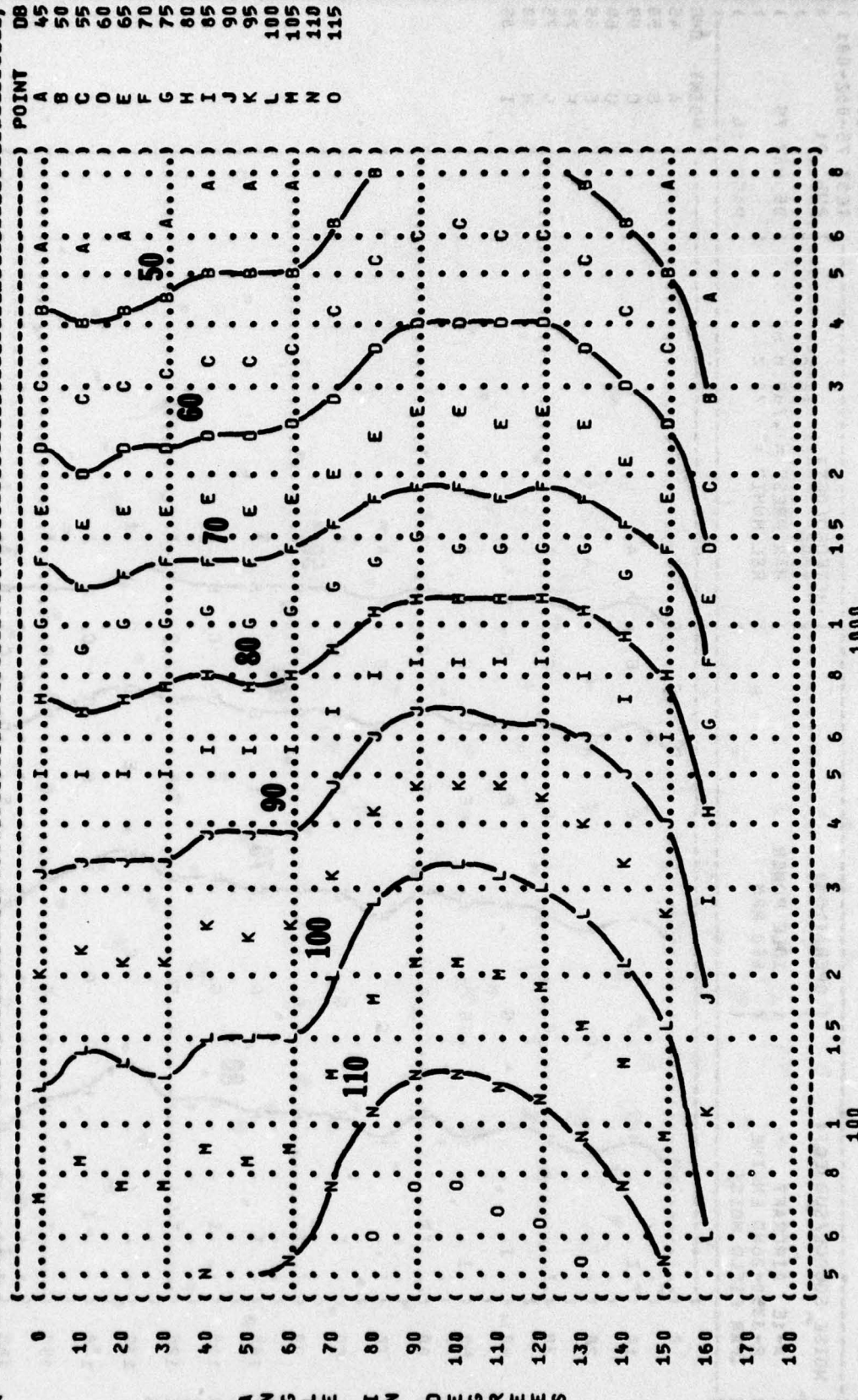


AZGJE HZ DEGRWWS

(FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL)
 (5 EQUAL LEVEL CONTOURS (DB)
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST 75-002-001
 () RUN 02
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = .760 M HG
 () REL HUMID = 70 %
 () 05 MAY 75
 () PAGE 13
 () NOISE SOURCE/SUBJECT: (OPERATION:
 (A-1E AIRCRAFT (1200 RPM
 (R-3350-26ND ENGINE
 (FAR FIELD NOISE

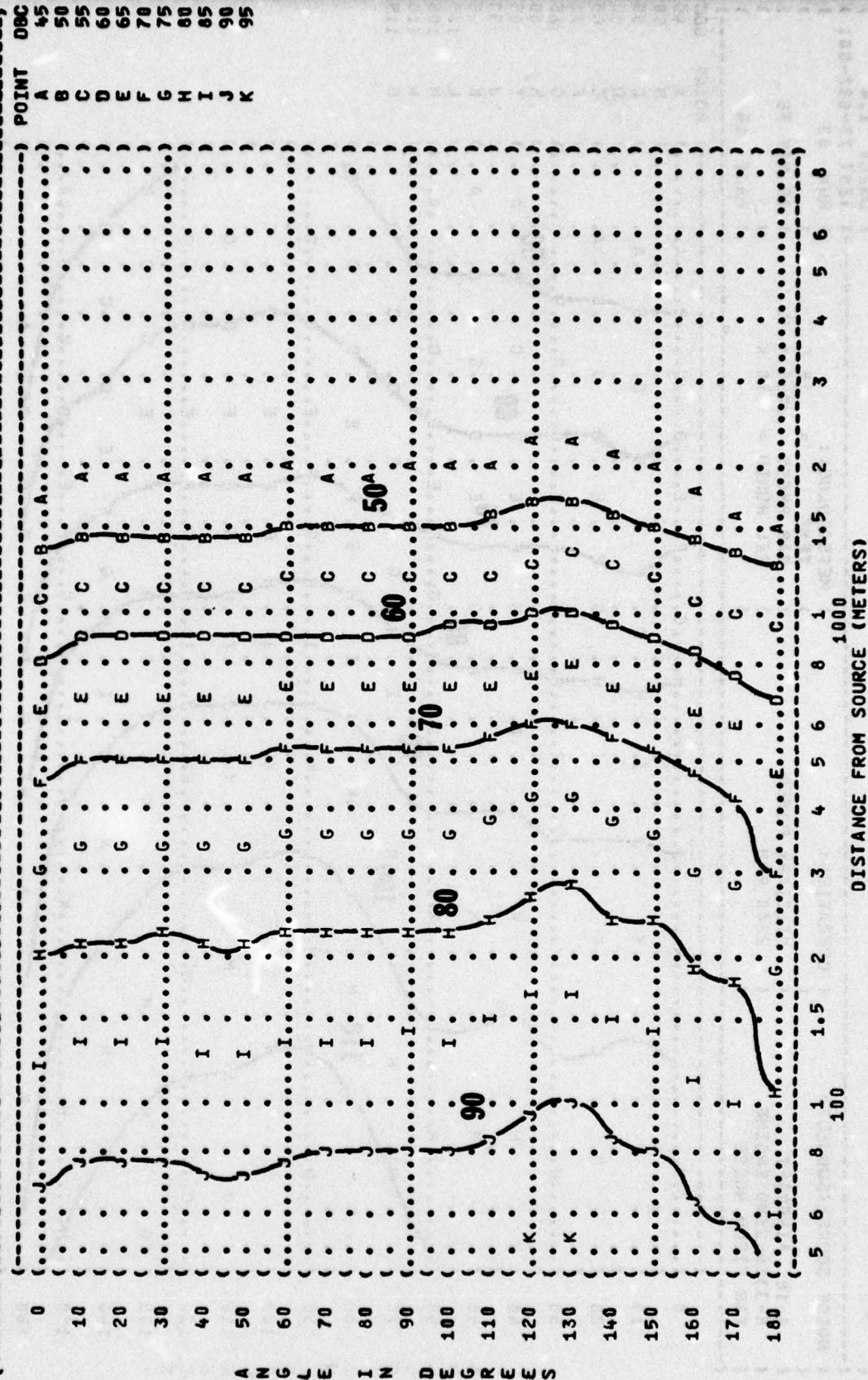


(FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL)
 (5 EQUAL LEVEL CONTOURS (DB)
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST 75-002-001
 () RUN 03
 (NOISE SOURCE/SUBJECT:) OPERATION:
 () A-1E AIRCRAFT)
 () R-3350-26MD ENGINE)
 () FAR FIELD NOISE)
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = .760 M HG
 () REL HUMID = 70 %
 () PAGE 13



A N G L E I N D E G R E E S

FIGURE: C-WEIGHTED OVERALL SOUND LEVEL (OASLC)
 6
 IDENTIFICATION:
 OMEGA 1.4
 TEST 75-002-001
 RUN 02
 METEOROLOGY:
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %
 NOISE SOURCE/SUBJECT:
 OPERATION:
 A-1E AIRCRAFT
 R-3350-26WD ENGINE
 FAR FIELD NOISE
 1200 RPM
 05 MAY 75
 PAGE 14



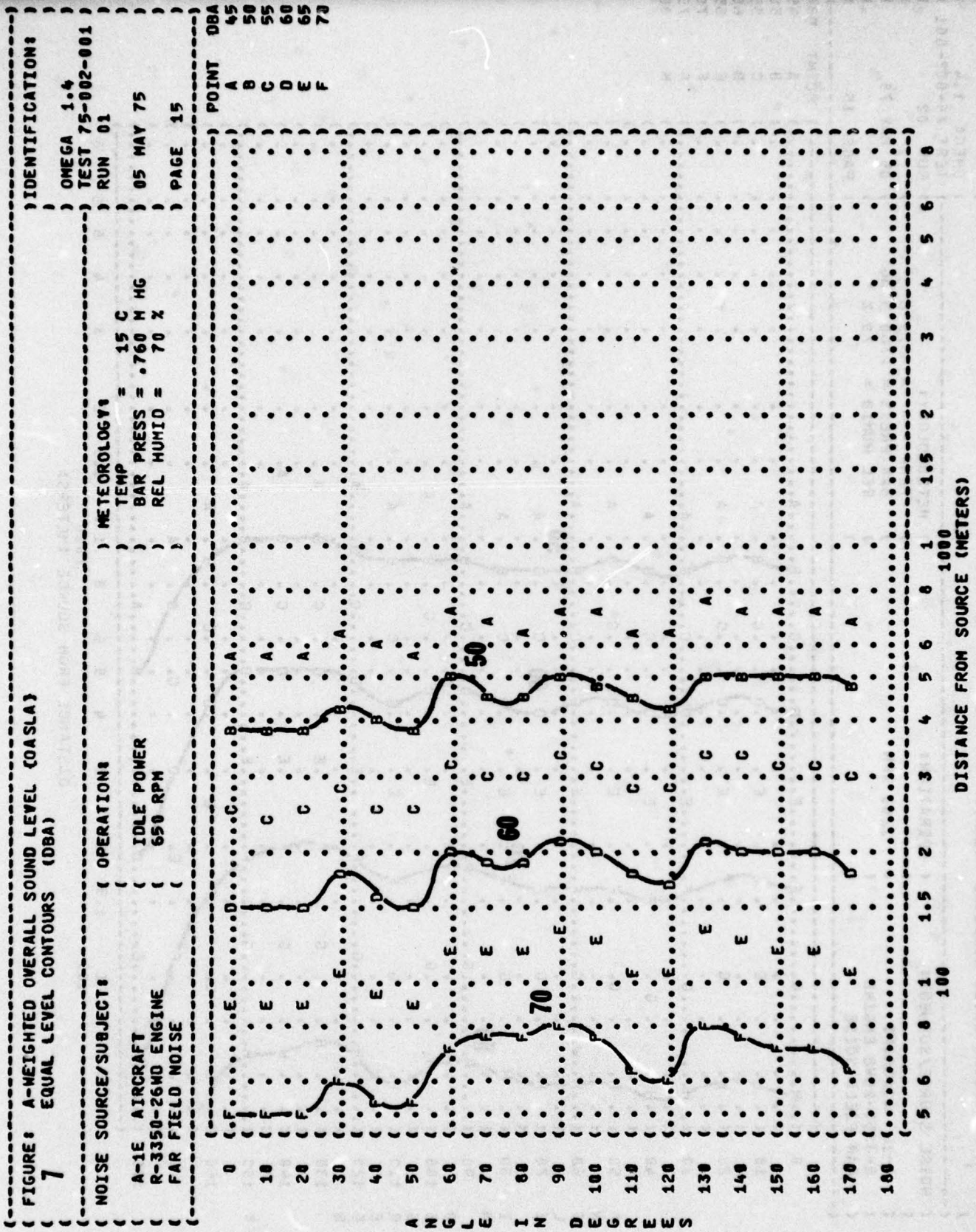


FIGURE 1 A-WEIGHTED OVERALL SOUND LEVEL (OASLA)
EQUAL LEVEL CONTOURS (DBA)

7

IDENTIFICATION: OMEGA 1.4
TEST 75-002-001
RUN 02
METEOROLOGY: TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %
OPERATION: 1200 RPM
NOISE SOURCE/SUBJECT: A-1E AIRCRAFT
R-3350-26WD ENGINE
FAR FIELD NOISE
PAGE 15

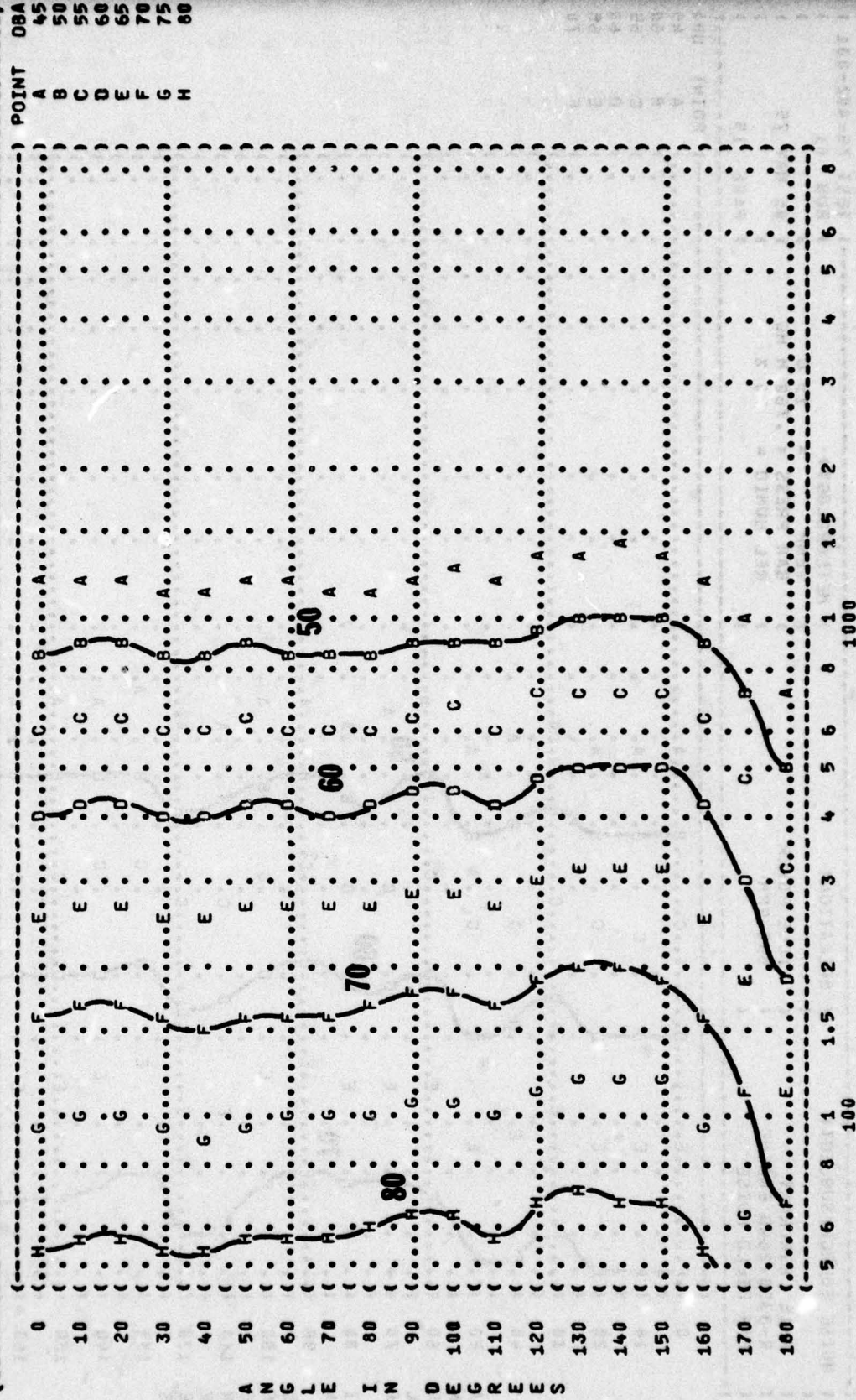
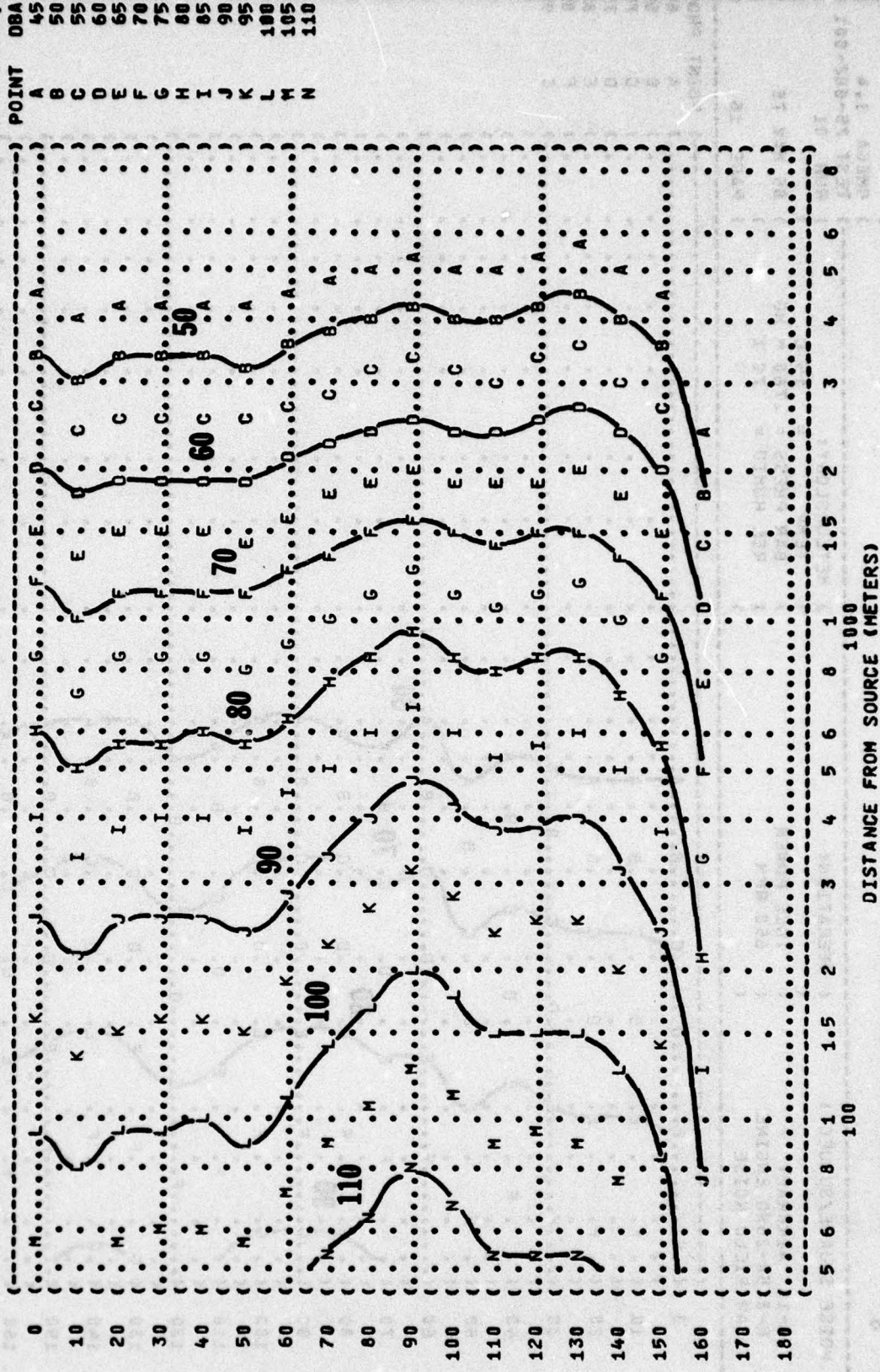


FIGURE: A-WEIGHTED OVERALL SOUND LEVEL (OASLA)
 7
 EQUAL LEVEL CONTOURS (DBA)

NOISE SOURCE/SUBJECT: (OPERATION:)
 A-1E AIRCRAFT (MILITARY POWER)
 R-3350-26MD ENGINE (2800 RPM)
 FAR FIELD NOISE ()
 METEOROLOGY: ()
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %
 IDENTIFICATION: ()
 OMEGA 1.4
 TEST 75-002-001
 RUN 83
 05 MAY 75
 PAGE 15



8

NOISE SOURCE/SUBJECT:	(OPERATION:	(METEOROLOGY:
A-1E AIRCRAFT	(TEMP = 15 C
R-3350-26WD ENGINE	(1200 RPM	BAR PRESS = .760 H HG
FAR FIELD NOISE	(REL HUMID = 70 %

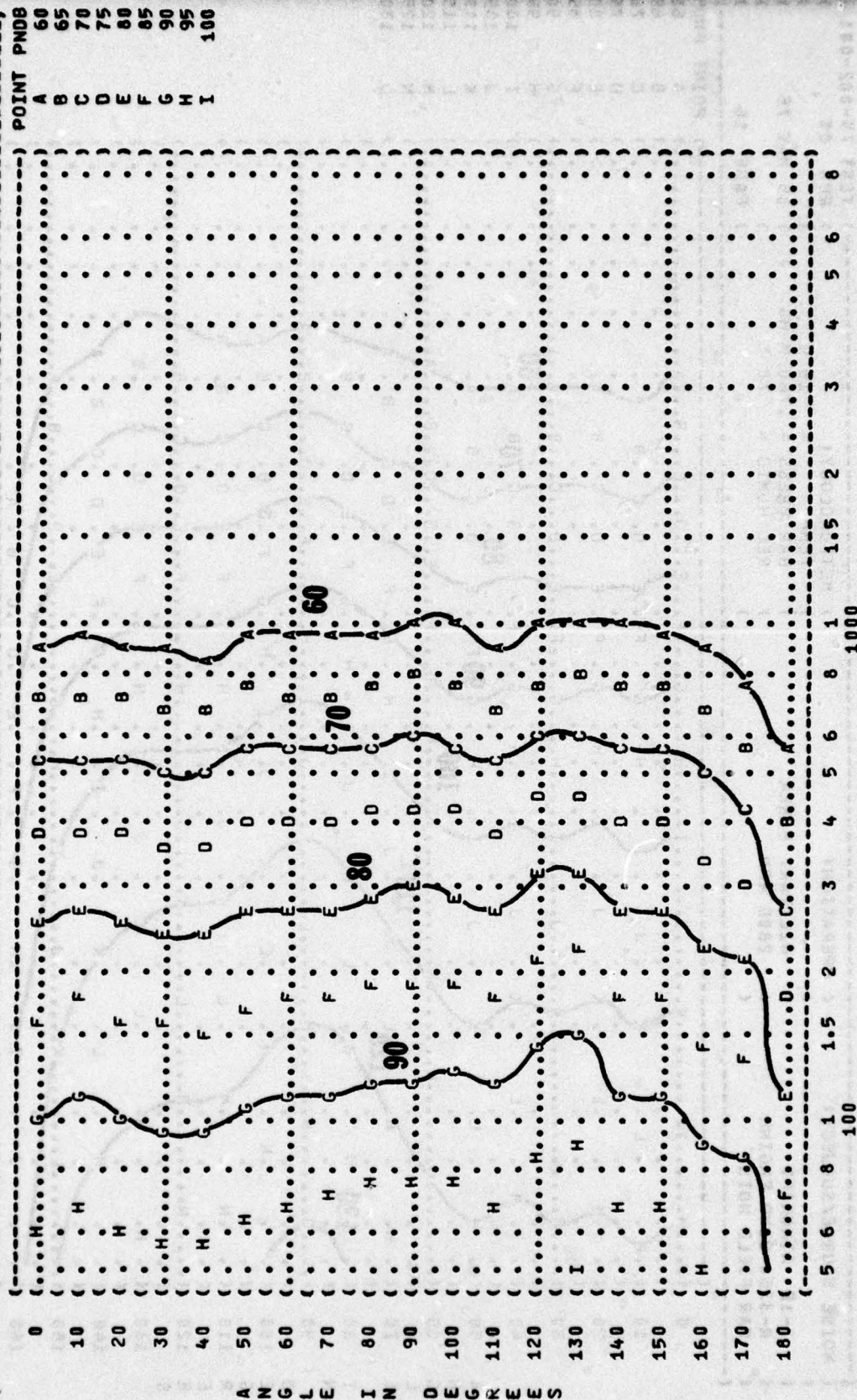
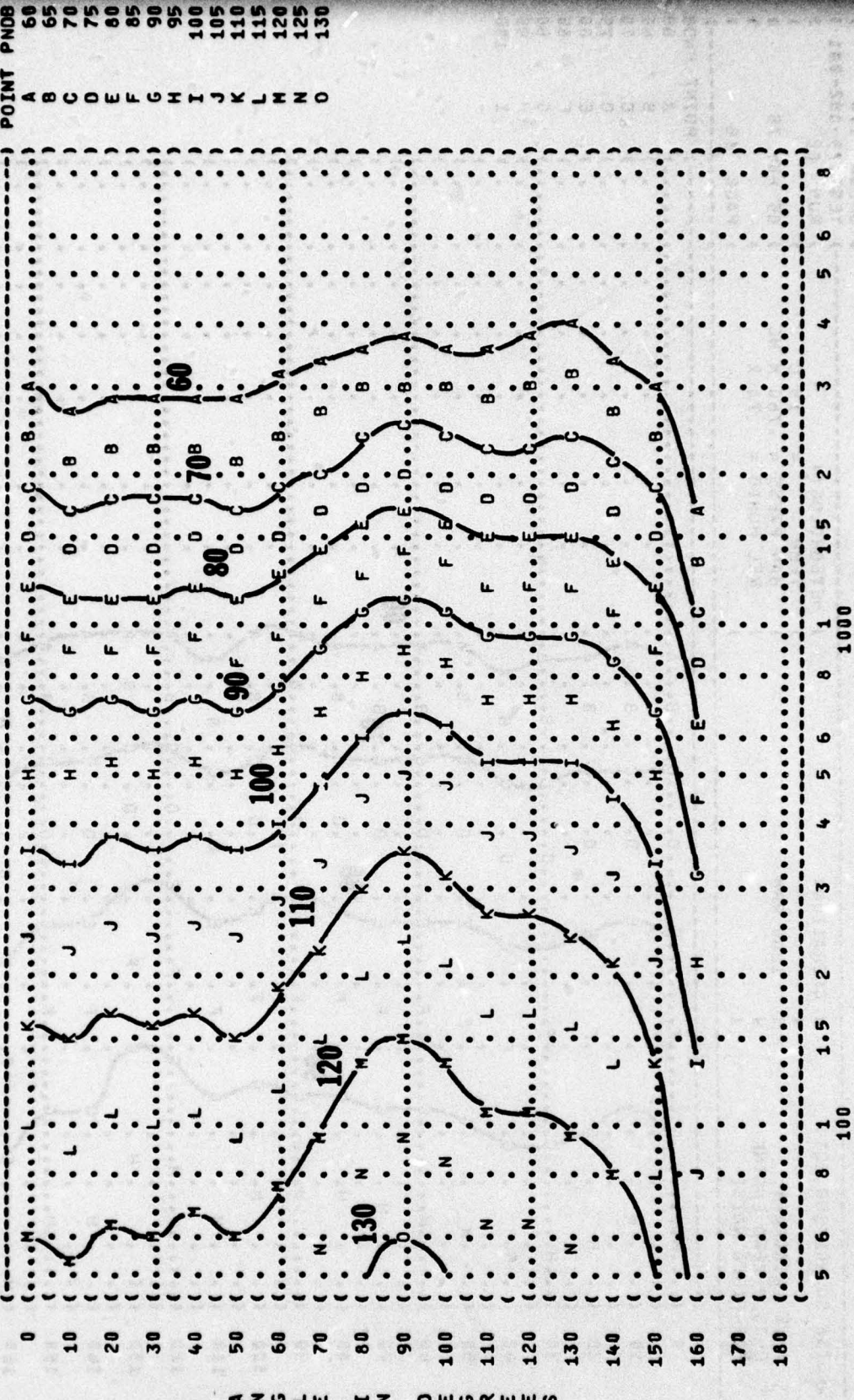


FIGURE 1 PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT)
EQUAL LEVEL CONTOURS (PNDB)

8

NOISE SOURCE/SUBJECT: () OPERATION: () METEOROLOGY: () IDENTIFICATION: ()
() A-1E AIRCRAFT () MILITARY POWER () TEMP = 15 C () OMEGA 1.4
() R-3350-26WD ENGINE () 2800 RPM () BAR PRESS = .760 M HG () TEST 75-002-001
() FAR FIELD NOISE () () REL HUMID = 70 % () RUN 03
() () () () 05 MAY 75 () ()
() () () () PAGE 16 ()



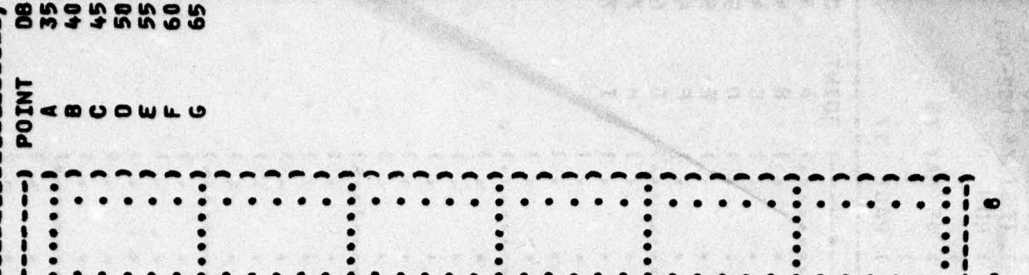
IDENTIFICATION:)
OMEGA 1.4)
TEST 75-002-001)
RUN 01)

•

RUN 01
 05 MAY 75
 PAGE 17

RI 05

05 MAY 75



.....

IDENTIFICATION:

100

OMEGA 1.4
TEST 75-002-001
RUN 02
05 MAY 75
PAGE 17

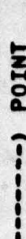
05 MAY 75

05 MAY 75
PAGE 17

05 MAY 75

PAGE 17

-----) POINT



●

DISTANCE FROM SOURCE (METERS)

37

FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)

10

NOISE SOURCE/SUBJECT: (OPERATION: (METEOROLOGY: () OMEGA 1.4

(A-1E AIRCRAFT (TEMP = 15 C

(R-3350-26WD ENGINE (BAR PRESS = .760 M HG

(FAR FIELD NOISE (REL HUMID = 70 %

() PAGE 8

IDENTIFICATION: () TEST 75-002-001

() RUN 02

() 05 MAY 75

0< (

10< (

20< (

30< (

40< (

50< (

60< (

70< (

80< (

90< (

100< (

110< (

120< (

130< (

140< (

150< (

160< (

170< (

180< (

A N G L E I N D E R E S

PERSONNEL MAY BE EXPOSED UP TO 960 MINUTES PER DAY

AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 50 METERS

FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)

UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:

MINIMUM QPL EAR MUFFS

AMERICAN OPTICAL 1700 EAR MUFFS

V-51R EAR PLUGS

COMFIT TRIPLE FLANGE EAR PLUGS

H-133 GROUND COMMUNICATION UNIT

5 6 8 1 1.5 2 3 4 5 6 8 1 1.5 2 3 4 5 6 8

100 1000

DISTANCE FROM SOURCE (METERS)

FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)

10 EQUAL TIME CONTOURS (MINUTES)

NO PROTECTION

NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)

A-1E AIRCRAFT () TEMP = 15 C)

R-3350-26WD ENGINE () MILITARY POWER) BAR PRESS = .760 M HG)

FAR FIELD NOISE () 2800 RPM) REL HUMID = 70 %)

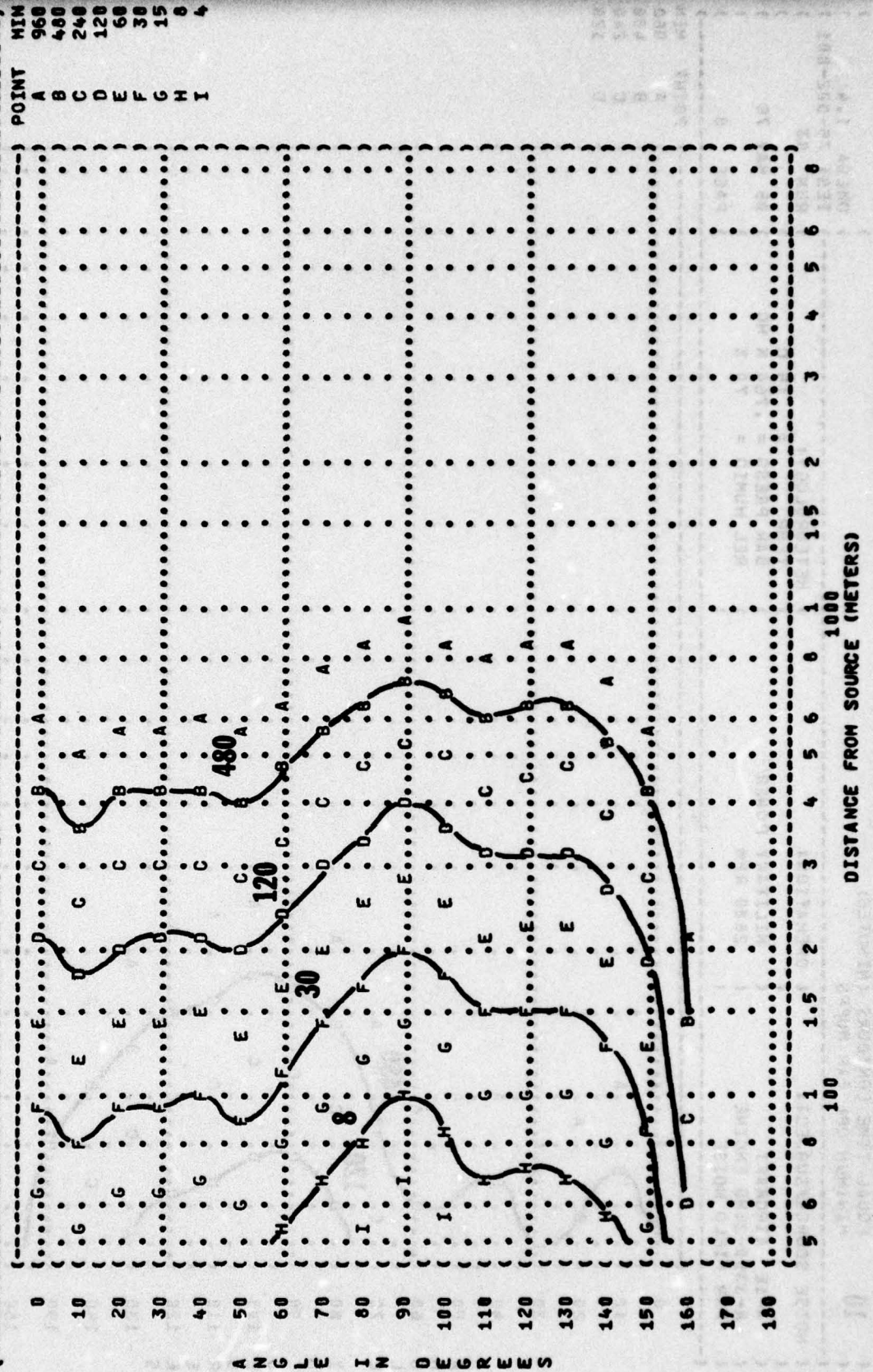
OMEGA 1.4)

TEST 75-002-001)

RUN 03)

05 MAY 75)

PAGE 7)



IDENTIFICATION:

EQUAL TIME CONTOURS (MINUTES)

10

MINIMUM QPL EAR MUFFS

SOURCE/SUBJECT:

OPERATIONS

METEOROLOGY:

A-1E AIRCRAFT
R-3350-26WD ENGINE
FAR FIELD NOISE

**MILITARY POWER
2800 RPM**

TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

OMEGA 1.4

TEST 75-002-001

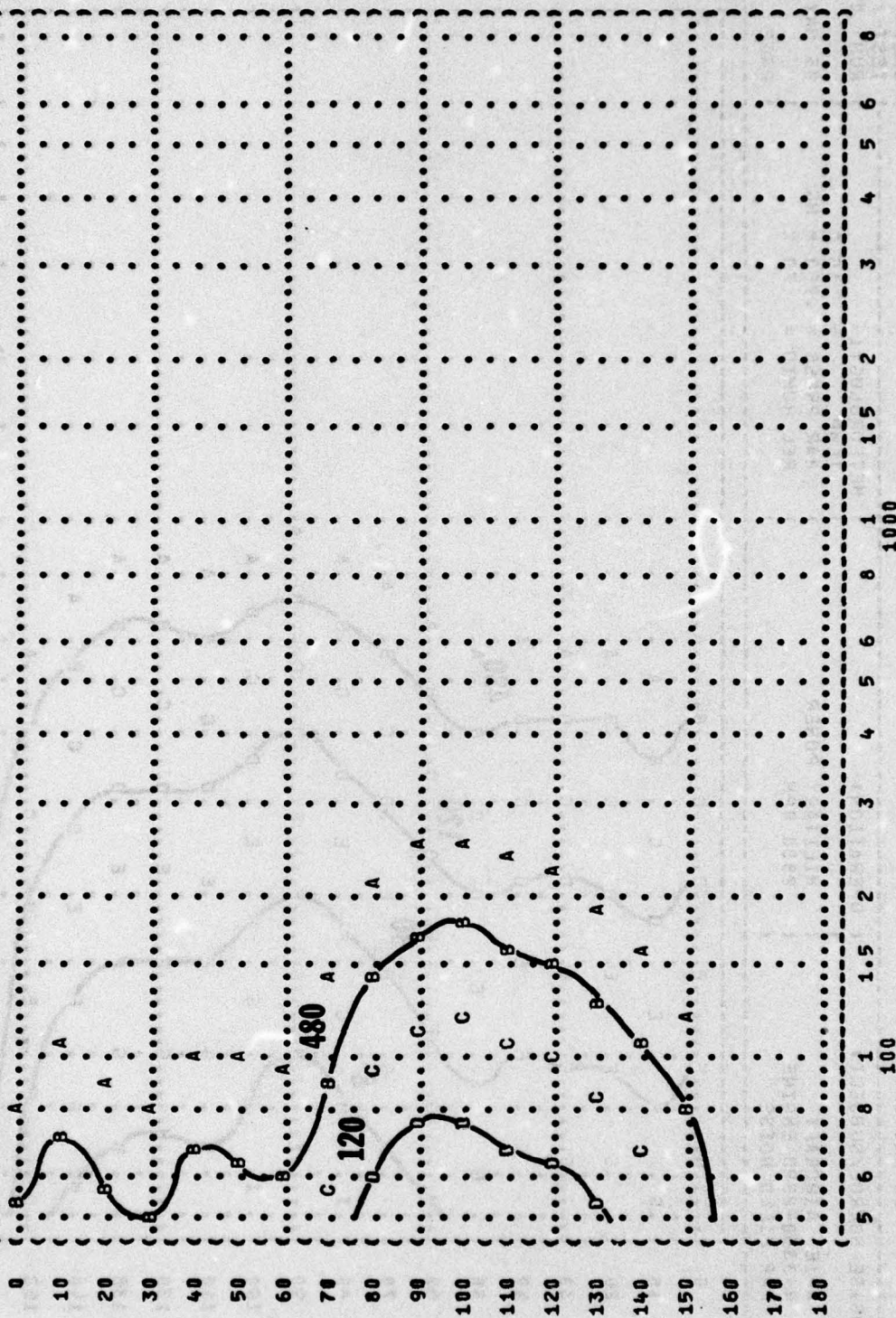
RUN 03

05 MAY 75

PAGE 8

POINT

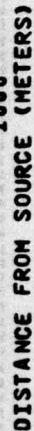
	A	B	C	D
960				
480				
240				
120				



DISTANCE FROM SOURCE (METERS)

420 LE IN DEGREE

POINT	MIN
A	960
B	480
C	240



ANGLE IN DEGREES

FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)

10 EQUAL TIME CONTOURS (MINUTES)

V-51R EAR PLUGS

NOISE SOURCE/SUBJECT: OPERATION: METEOROLOGY: IDENTIFICATIONS:

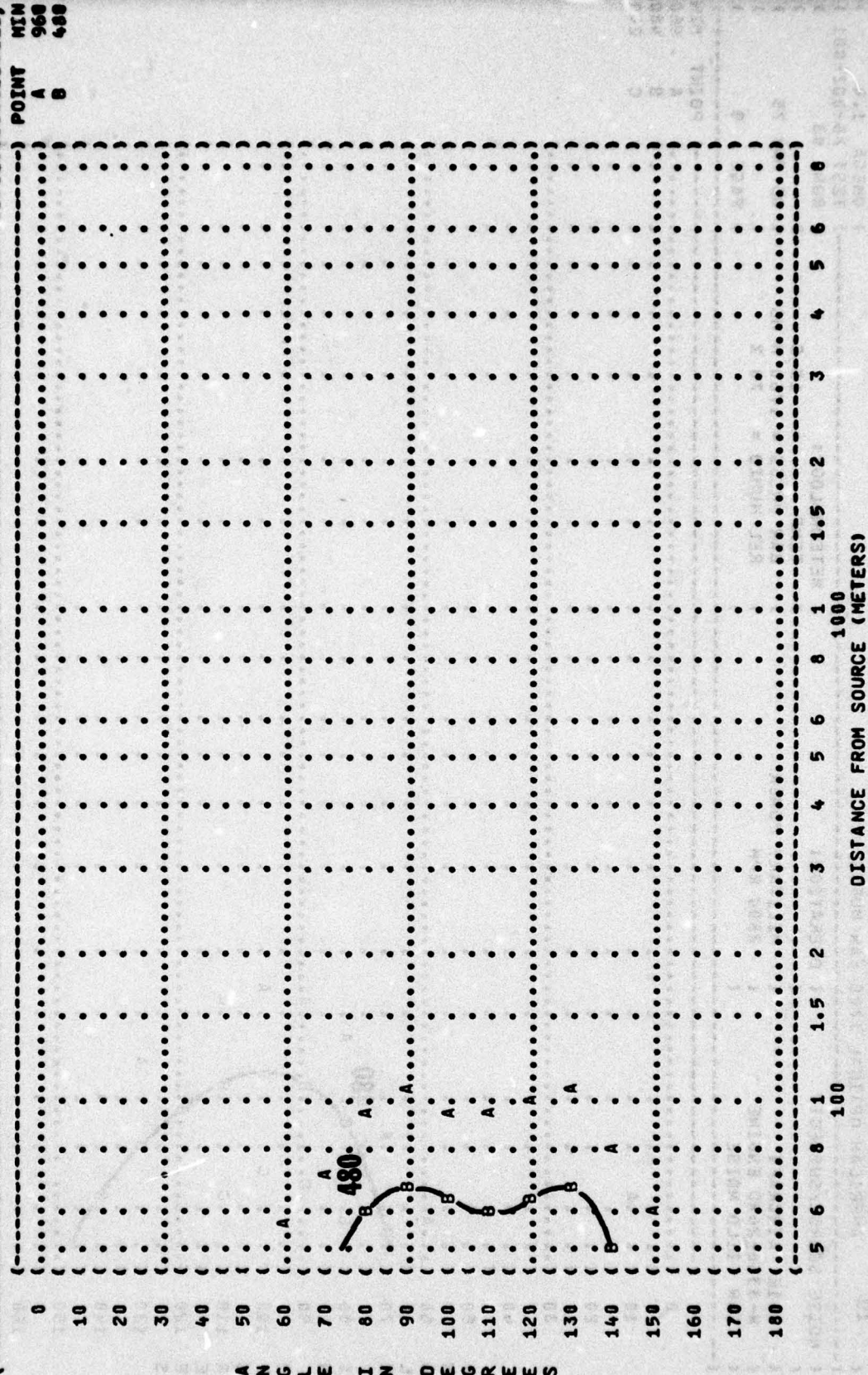
A-1E AIRCRAFT (TEMP = 15 C) OMEGA 1.4

R-3350-26WD ENGINE (MILITARY POWER) TEST 75-002-001

FAR FIELD NOISE (2800 RPM) RUN 03

(85 MAY 75)

(PAGE 10)



A N G L E I N D E E R E E S

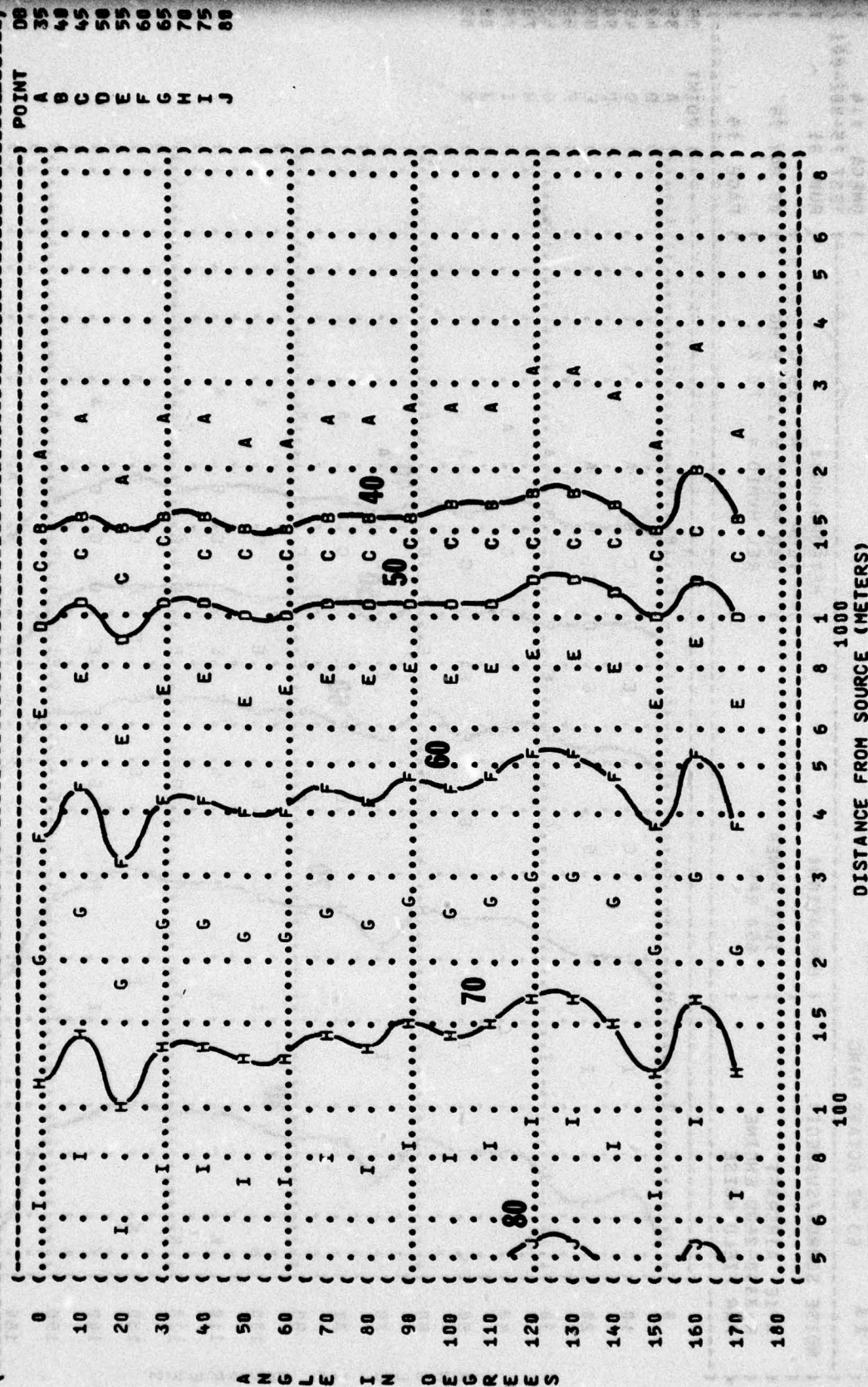
DISTANCE FROM SOURCE (METERS)

AZG JE IN DEWEDEN

((FIGURE: SOUND PRESSURE LEVEL (SPL)
 ((11 EQUAL LEVEL CONTOURS (DB)
 ((31.5 HZ OCTAVE BAND
 ((NOISE SOURCE/SUBJECT: (OPERATION:
 ((A-1E AIRCRAFT (IDLE POWER
 ((R-3350-26MD ENGINE (650 RPM
 ((FAR FIELD NOISE (

) IDENTIFICATION:
) OMEGA 1.4
) TEST 75-002-001
) RUN 01
) 05 MAY 75
) PAGE 18

) METEOROLOGY:
) TEMP = 15 C
) BAR PRESS = .760 M HG
) REL HUMID = 70 %



ANGLE IN DEGREES

FIGURE: SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
63 HZ OCTAVE BAND

11

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-001

RUN 01

NOISE SOURCE/SUBJECT:

OPERATION:

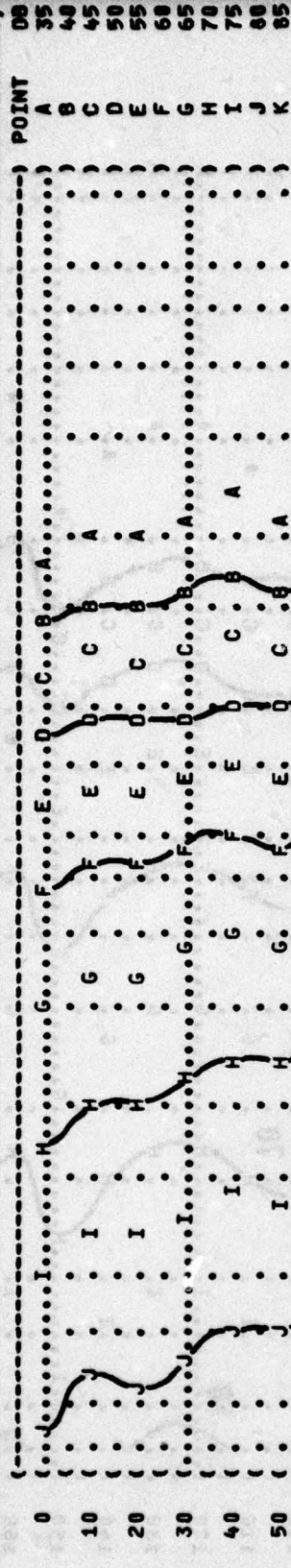
METEOROLOGY:

A-1E AIRCRAFT
R-3350-26WD ENGINE
FAR FIELD NOISE

IDLE POWER
650 RPM

TEMP = 15 C
BAR PRESS = .760 H HG
REL HUMID = 70 %

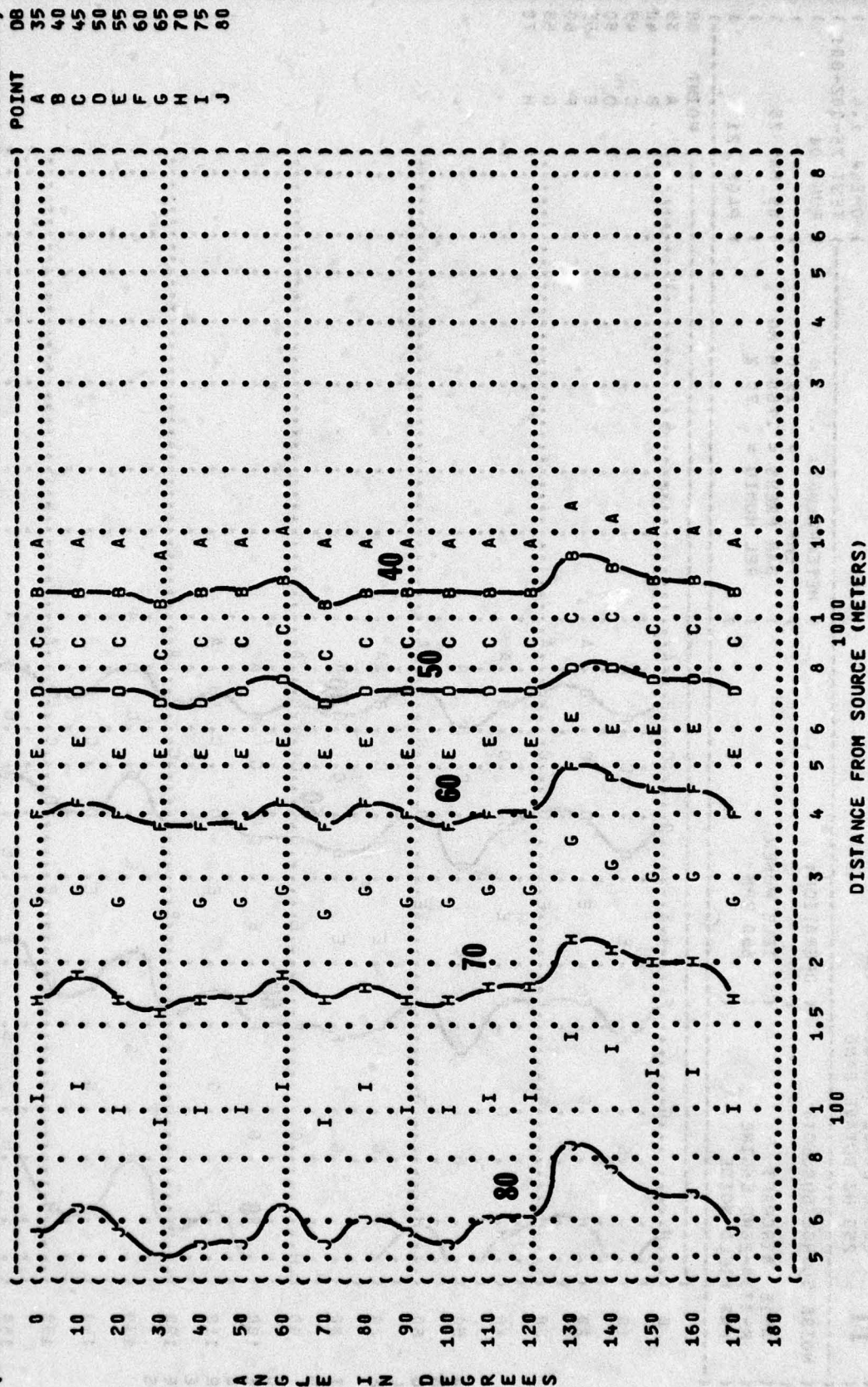
PAGE 19



ANGLE IN DEGREES

DISTANCE FROM SOURCE (METERS)

(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (11 EQUAL LEVEL CONTOURS (DB))
 (125 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (OPERATION:)
 (A-1E AIRCRAFT)
 (R-3350-26WD ENGINE)
 (FAR FIELD NOISE)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 75-002-001)
 (RUN 01)
 (05 MAY 75)
 (PAGE 20)



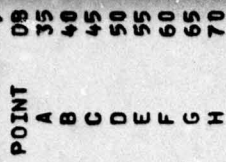
ANGLE IN DEGREES

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-000
RUN 01
05 MAY 75
PAGE 21

TEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

BAR PRESS = .760 M HG
REL HUMID = 70 %

PAGE 21



1000
DISTANCE FROM SOURCE (METERS)

FIGURE: SOUND PRESSURE LEVEL (SPL)
 11 EQUAL LEVEL CONTOURS (DB)
 1000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT: () OPERATION: () METEOROLOGY: ()
 () A-1E AIRCRAFT () TEMP = 15 C
 () R-3350-26WD ENGINE () IDLE POWER () BAR PRESS = .760 M HG
 () FAR FIELD NOISE () 650 RPM () REL HUMID = 70 %
 () () () ()

IDENTIFICATION: ()
 () OMEGA 1.4
 () TEST 75-002-001
 () RUN 01
 () 05 MAY 75
 () PAGE 23

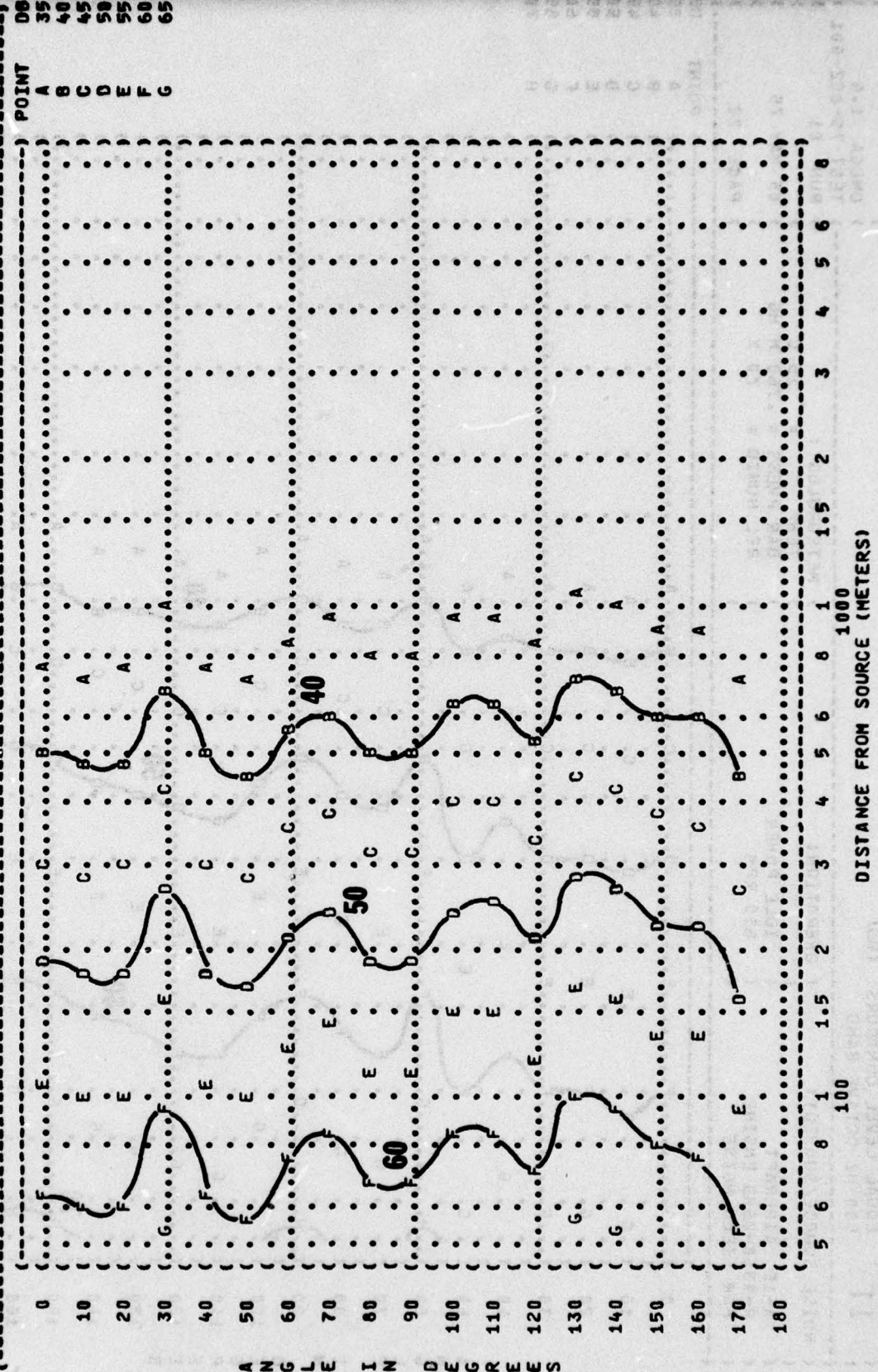


FIGURE: SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
2000 HZ OCTAVE BAND

11

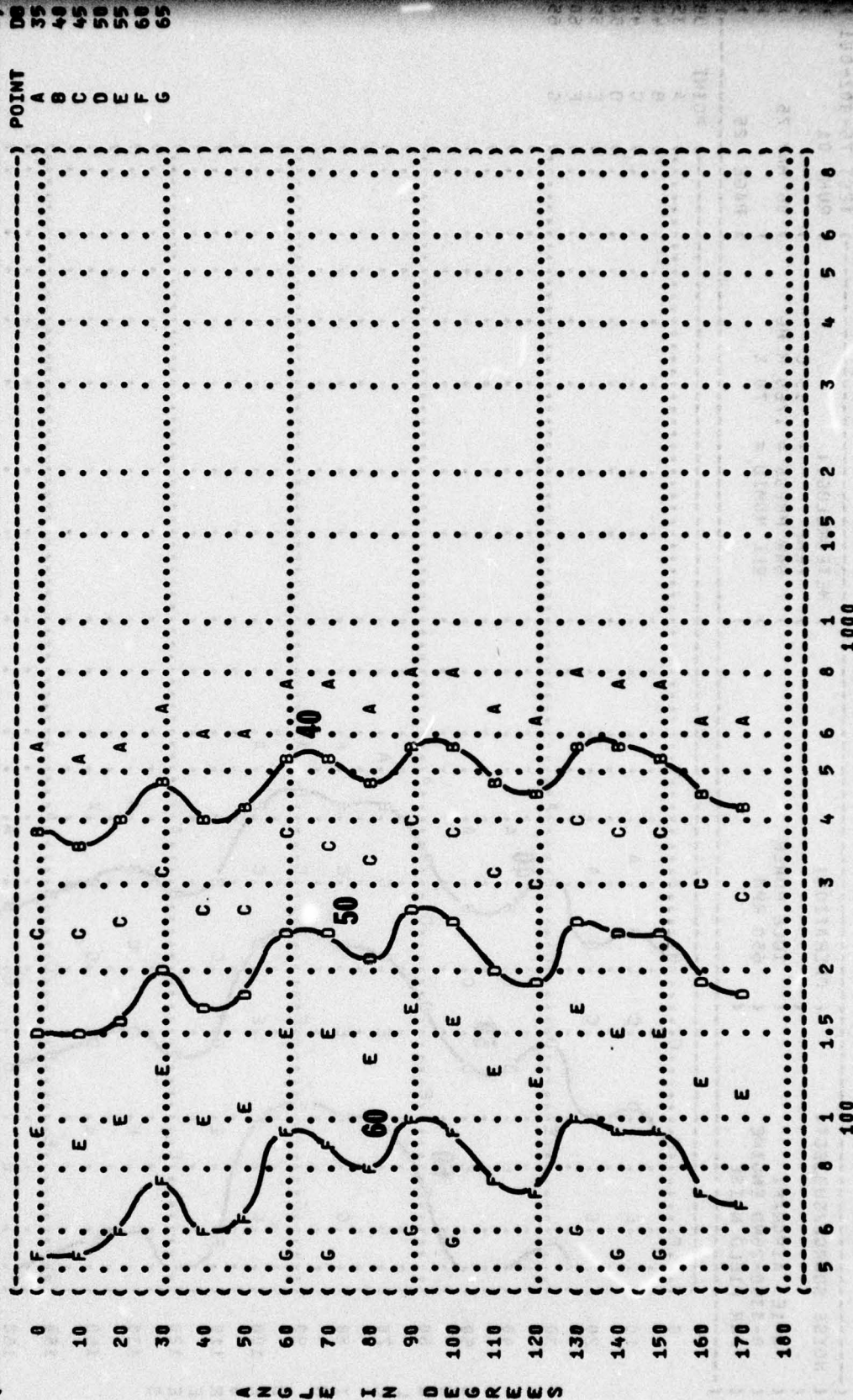
IDENTIFICATION:
OMEGA 1.4
TEST 75-002-001
RUN 01

NOISE SOURCE/SUBJECT:
A-1E AIRCRAFT
R-3350-26ND ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
650 RPM

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

PAGE 24



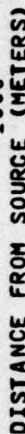
IDENTIFICATION:
OMEGA 1.4
TEST 75-002-001

OMEGA 1.4

METEOROLOGY:
TEMP
BAR PRESS
REL HUMID

TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

-----) P



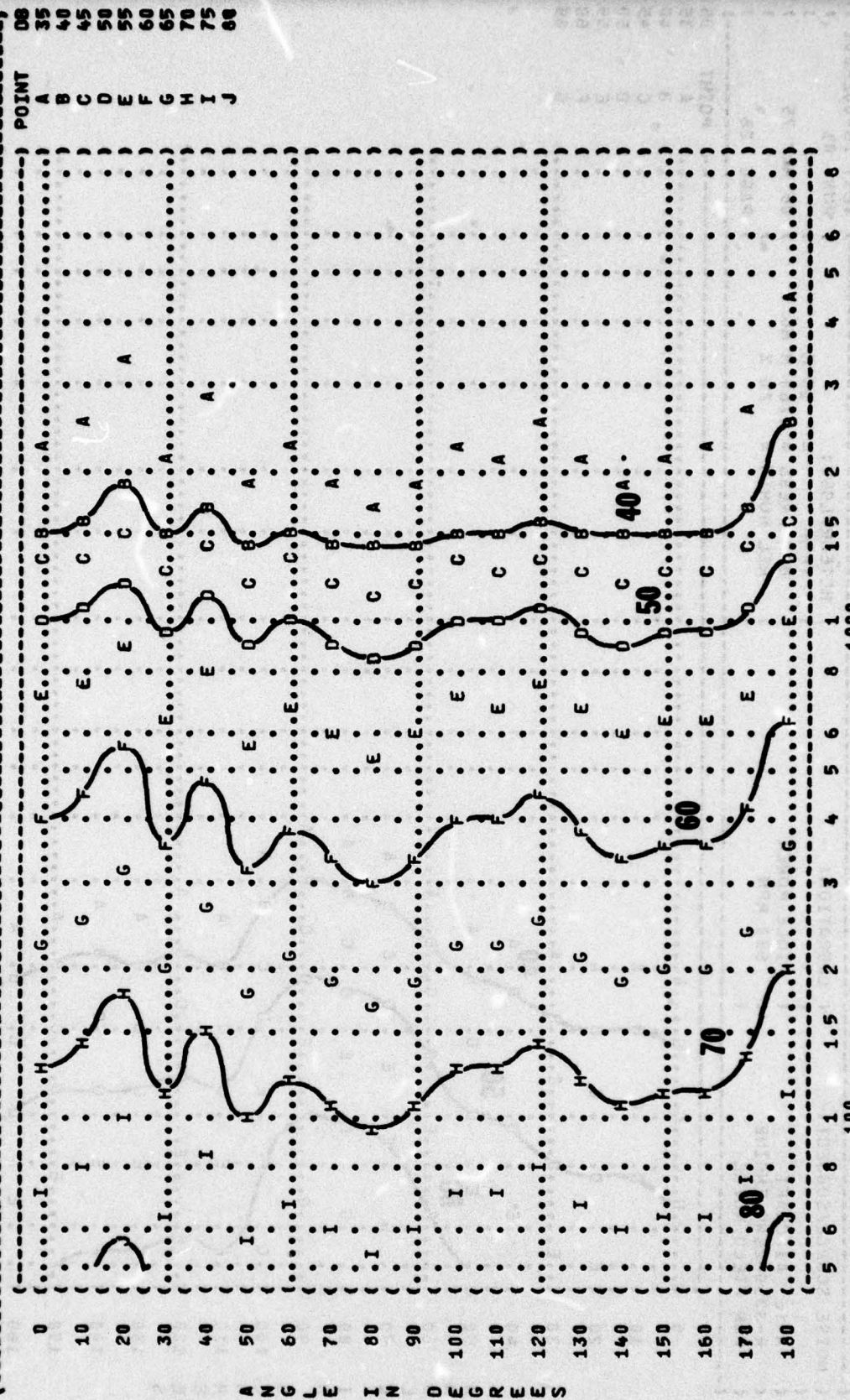
ANUJE IN DEDERES

FIGURE: SOUND PRESSURE LEVEL (SPL)
 11 EQUAL LEVEL CONTOURS (DB)
 31.5 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT: (OPERATION:)
 (A-1E AIRCRAFT (1200 RPM)
 (R-3350-26MD ENGINE ()
 (FAR FIELD NOISE ()

METEOROLOGY:
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

IDENTIFICATION:
 OMEGA 1.4
 TEST 75-002-001
 RUN 02
 05 MAY 75
 PAGE 18



DISTANCE FROM SOURCE (METERS)

A N G L E I N D E G R E E S

FIGURE: SOUND PRESSURE LEVEL (SPL)
 11 EQUAL LEVEL CONTOURS (DB)
 63 HZ OCTAVE BAND
 NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 A-1E AIRCRAFT ((1200 RPM) TEMP = 15 C)
 R-3350-26MD ENGINE (()) BAR PRESS = .760 M HG)
 FAR FIELD NOISE (()) REL HUMID = 70 %)
 IDENTIFICATION:)
 OMEGA 1.4
 TEST 75-002-001
 RUN 02
 05 MAY 75
 PAGE 19

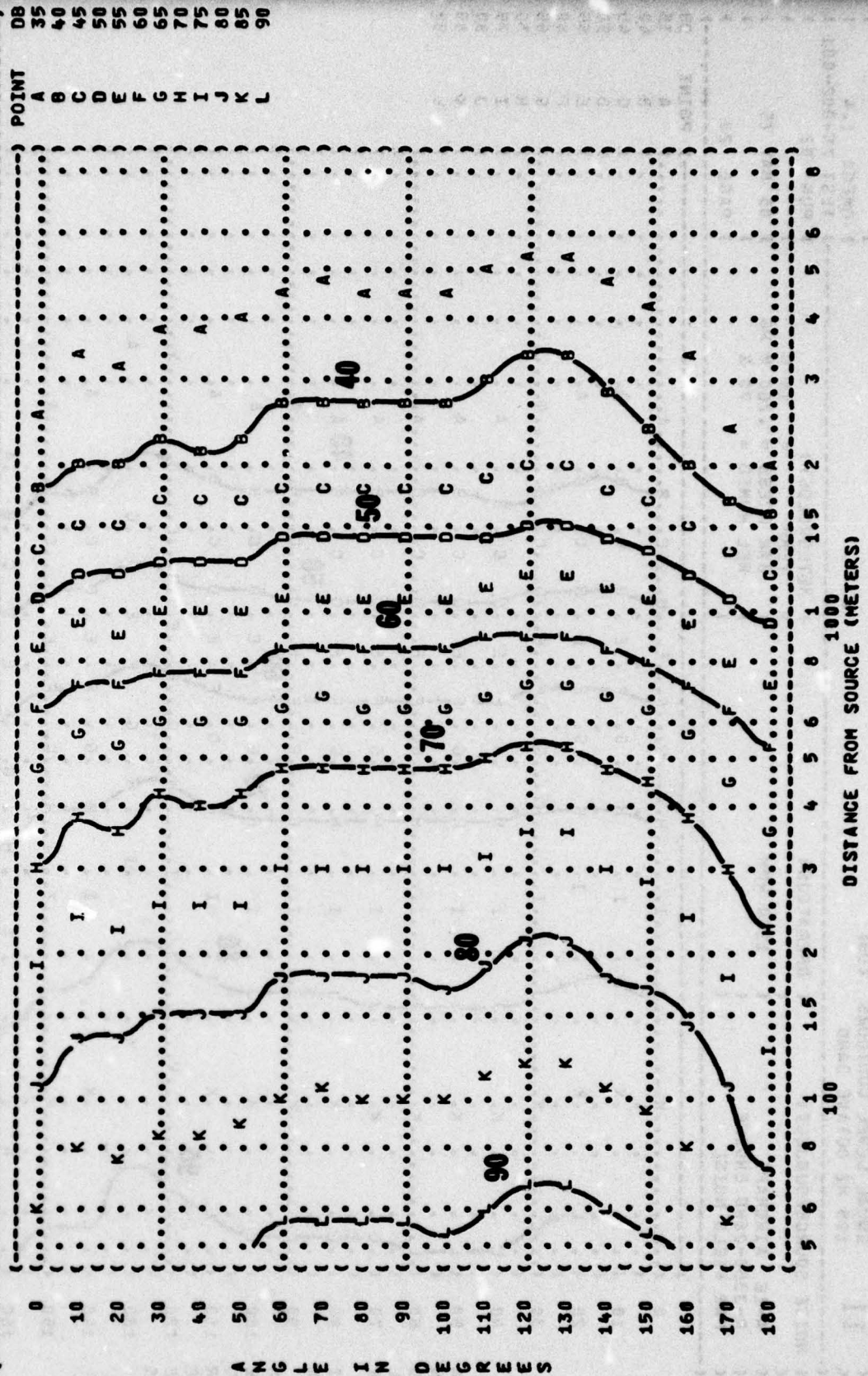
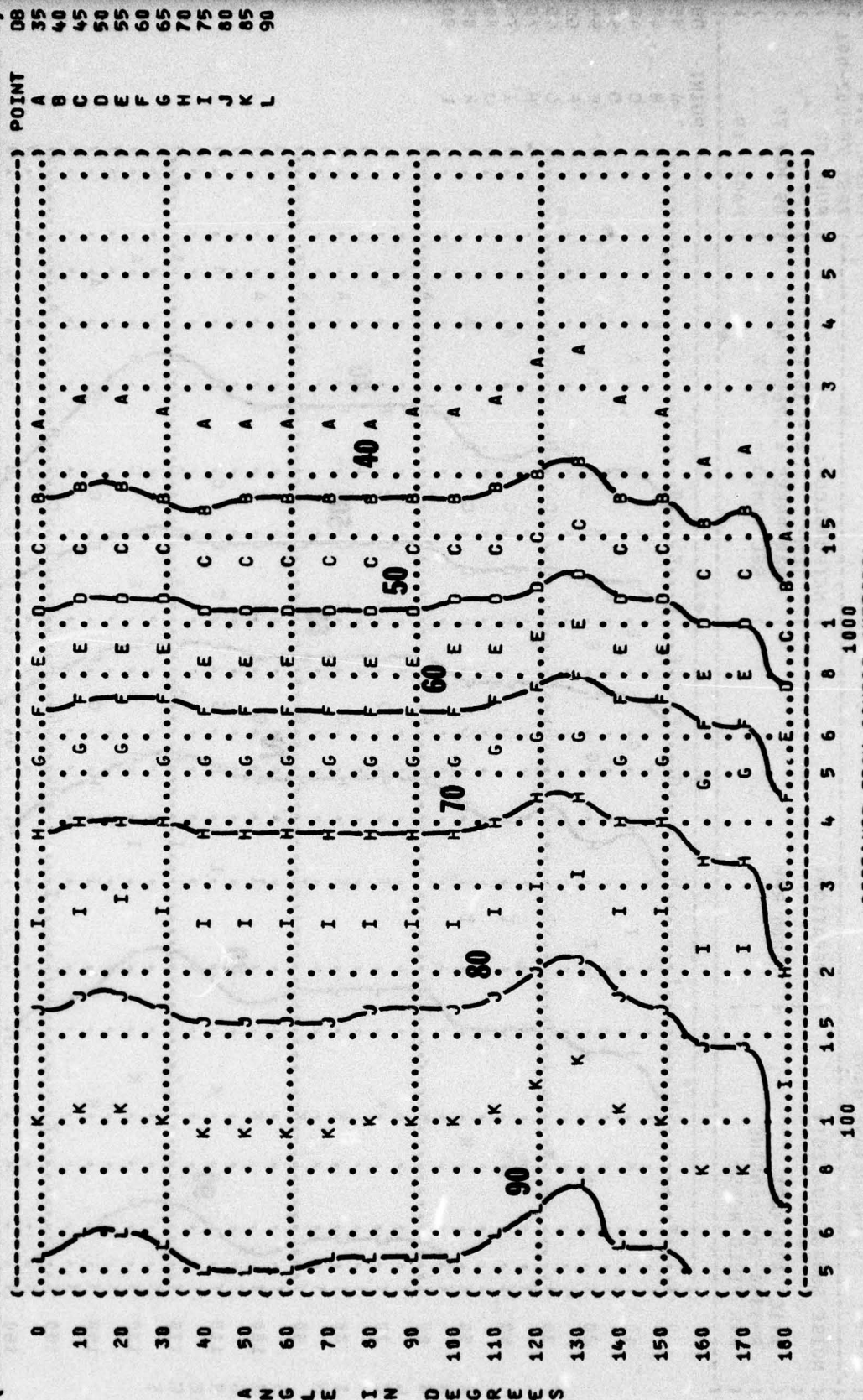


FIGURE: SOUND PRESSURE LEVEL (SPL)
 11 EQUAL LEVEL CONTOURS (DB)
 125 HZ OCTAVE BAND
 NOISE SOURCE/SUBJECT: (OPERATION:)
 A-1E AIRCRAFT (1200 RPM)
 R-3350-26WD ENGINE ()
 FAR FIELD NOISE ()
 METEOROLOGY: ()
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %
 IDENTIFICATION: ()
 OMEGA 1.4
 TEST 75-002-001
 RUN 02
 05 MAY 75
 PAGE 20



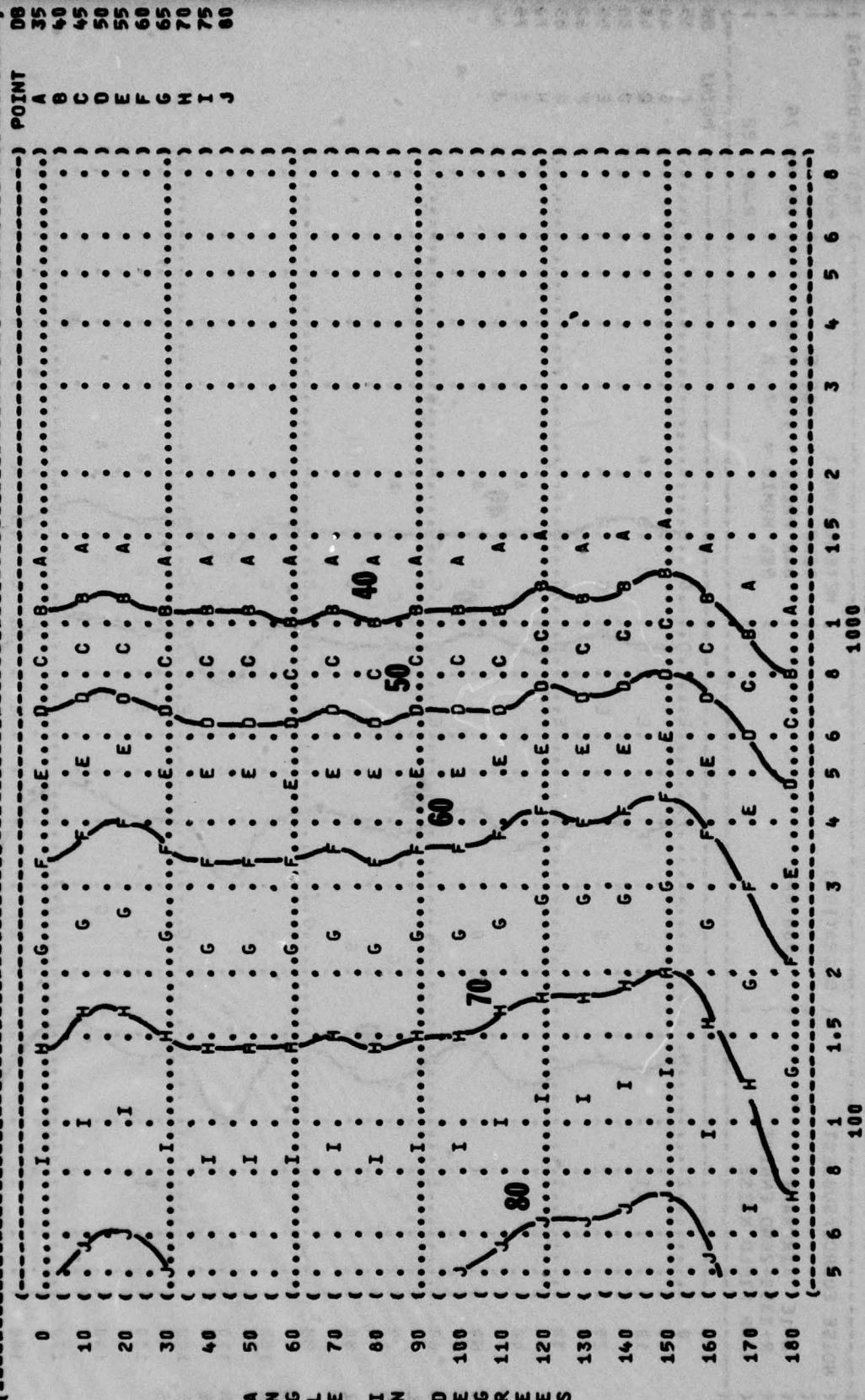
DISTANCE FROM SOURCE (METERS)

A N G L E I N D E G R E E S

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (250 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (A-1E AIRCRAFT (1200 RPM
 (R-3350-26WD ENGINE
 (FAR FIELD NOISE (

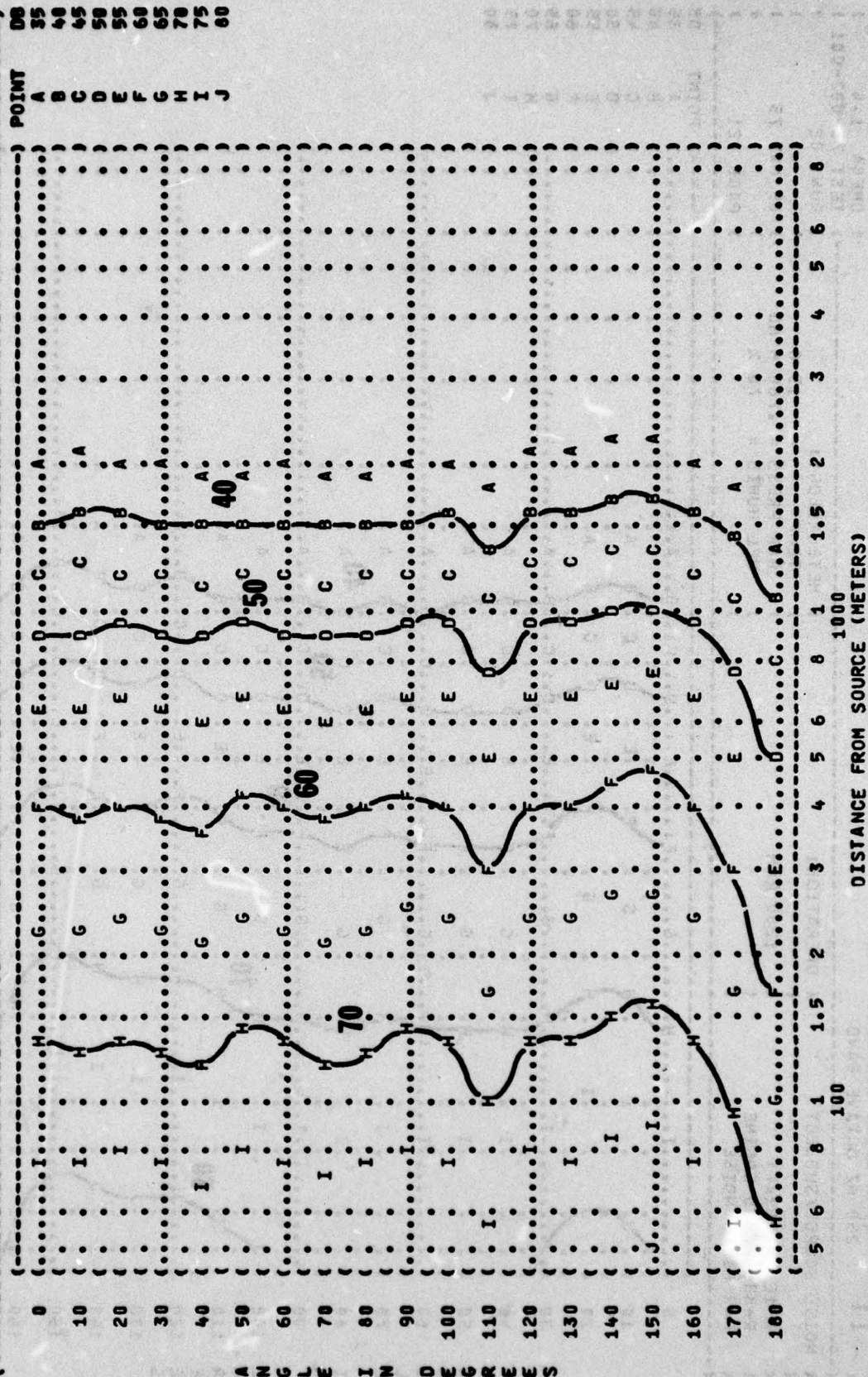
) IDENTIFICATION:
) OMEGA 1.4
) TEST 75-002-001
) RUN 02
) 05 MAY 75
) PAGE 21

) METEOROLOGY:
) TEMP = 15 C
) BAR PRESS = .760 H HG
) REL HUMID = 70 %



DISTANCE FROM SOURCE (METERS)


```
(-----)
( FIGURE: SOUND PRESSURE LEVEL {SPL} ) IDENTIFICATION: )
( EQUAL LEVEL CONTOURS (DB) ) )
( 11 ) OMEGA 1.4 )
( 500 HZ OCTAVE BAND ) TEST 75-002-001 )
( NOISE SOURCE/SUBJECT: ) METEOROLOGY: ) RUN 02 )
( ) TEMP = 15 C ) )
( ) BAR PRESS = .760 M HG ) 05 MAY 75 )
( A-1E AIRCRAFT ) REL HUMID = 70 % ) )
( R-3350-26WD ENGINE ) ) )
( FAR FIELD NOISE ) PAGE 22 )
(-----)
```

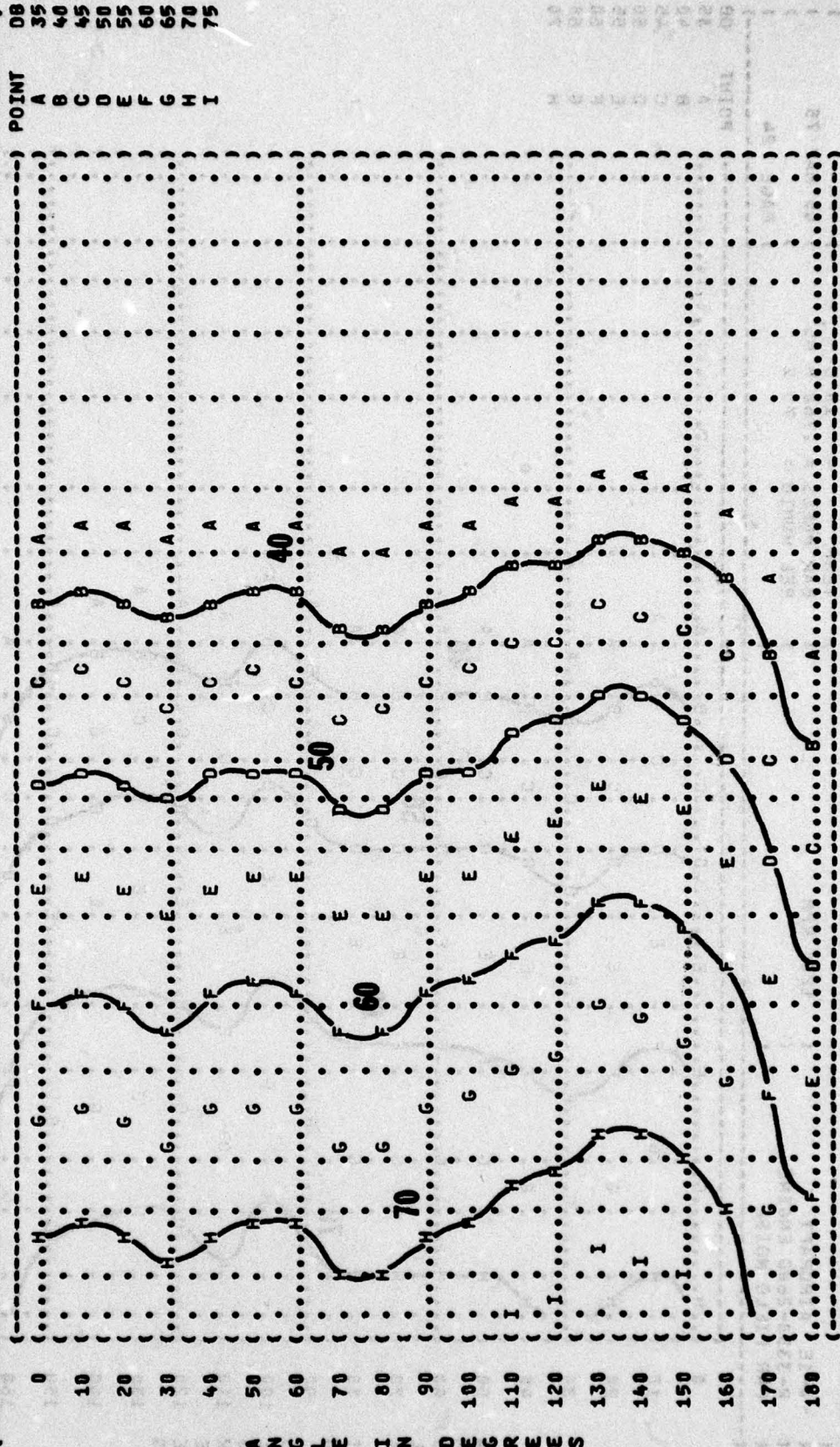


IDENTIFICATION: OMEGA 1.4
 TEST 75-002-001
 RUN 02
 05 MAY 75
 PAGE 23

METEOROLOGY:
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

OPERATION:
 1200 RPM

NOISE SOURCE/SUBJECT:
 A-1E AIRCRAFT
 R-3350-26MD ENGINE
 FAR FIELD NOISE



DISTANCE FROM SOURCE (METERS)
 1000
 100
 50
 20
 10
 5
 2
 1
 0.5
 0.2
 0.1

A N G L E I N D E G R E E S
 180
 170
 160
 150
 140
 130
 120
 110
 100
 90
 80
 70
 60
 50
 40
 30
 20
 10
 0

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-00

1.4

THE

NOISE SOURCE/SUBJECT:

(OPERATION:

METEOROLOGY:

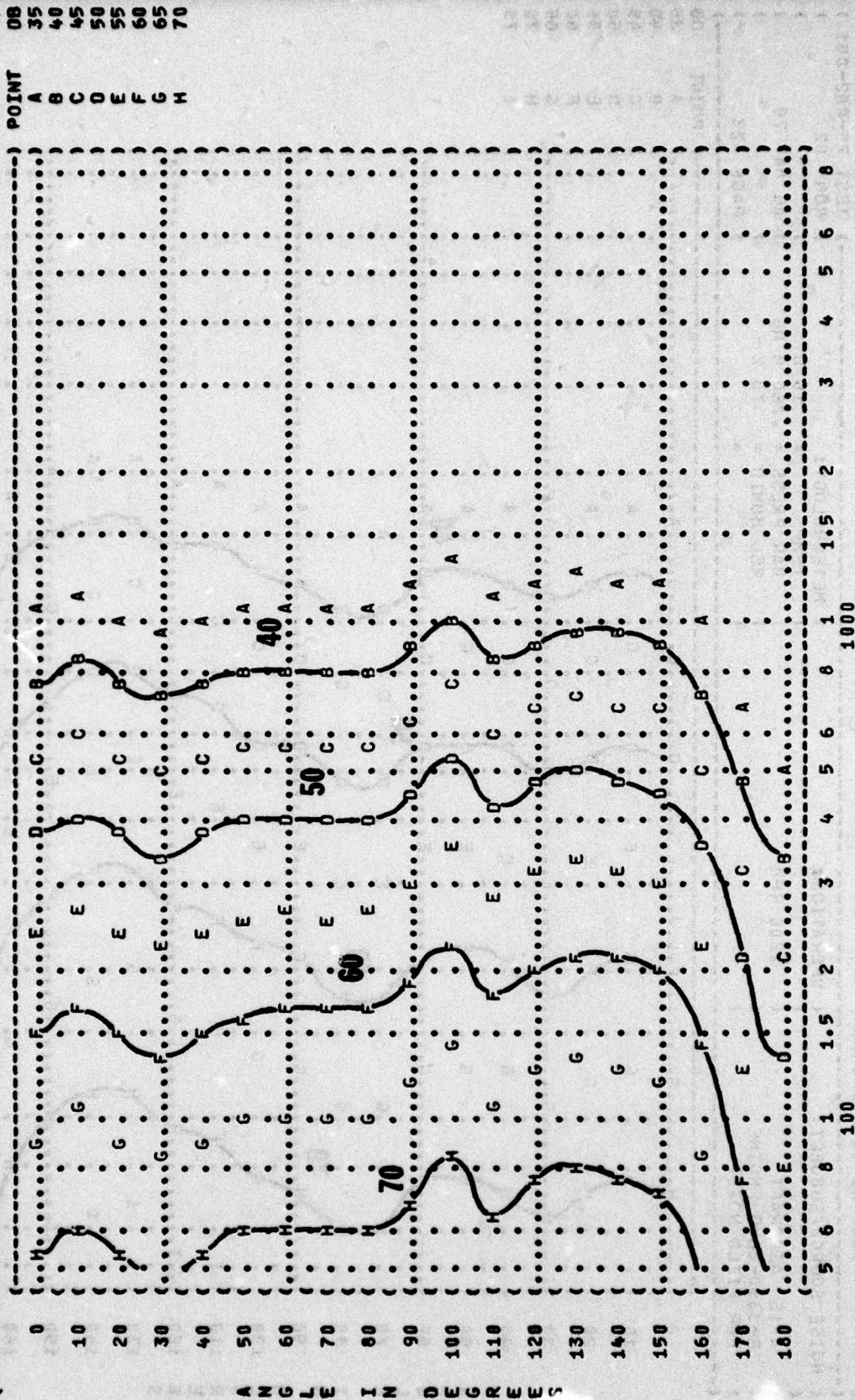
A-1E AIRCRAFT
R-3350-26WD ENGINE
FAR FIELD NOISE

1200 RPM

TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

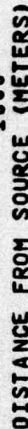
FAR FIELD NOISE

PAGE 24

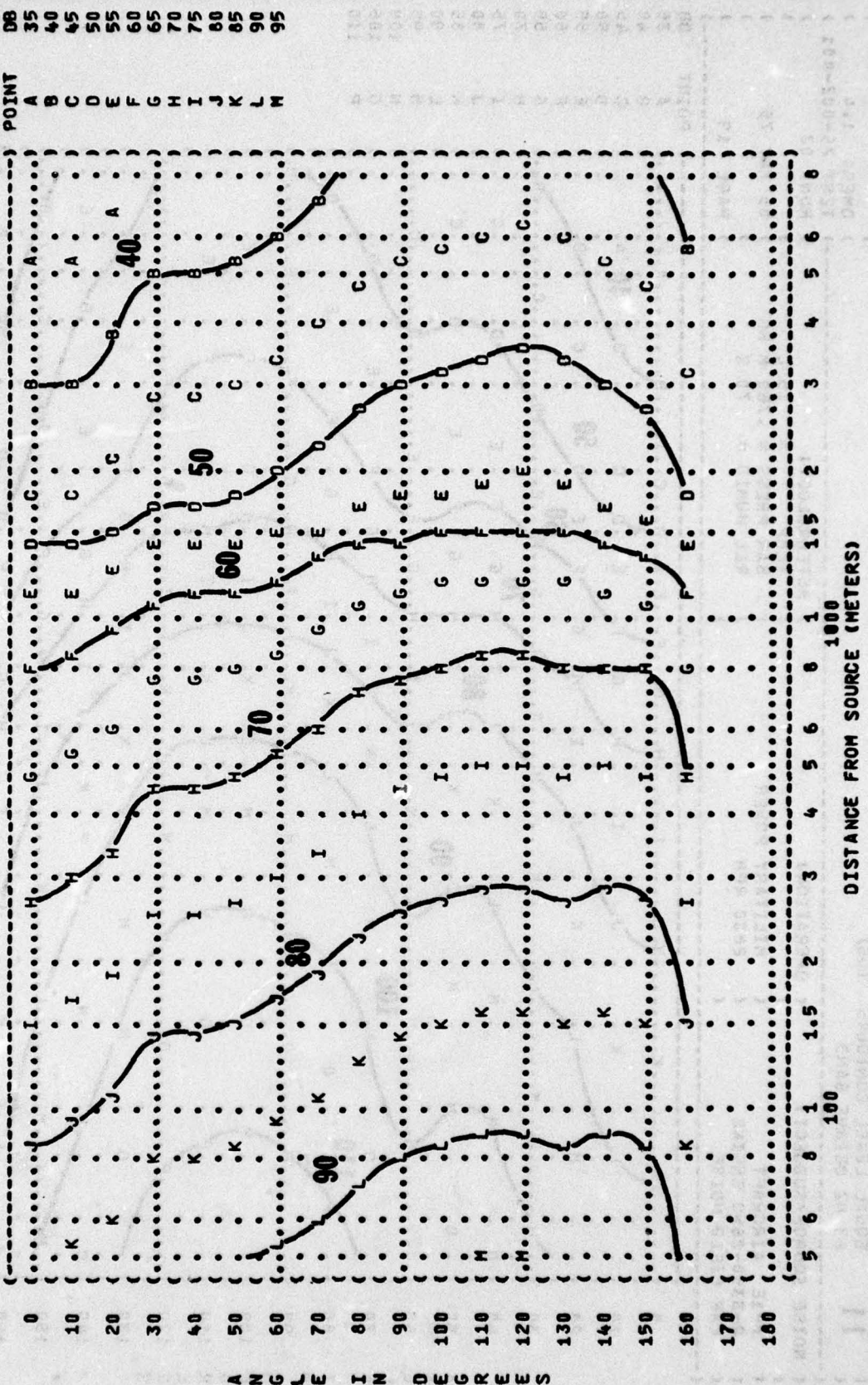


DISTANCE FROM SOURCE (METERS)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-00
RUN 02
05 MAY 75
PAGE 25



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (31.5 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (A-1E AIRCRAFT (TEMP = 15 C
 (R-3350-26WD ENGINE (MILITARY POWER
 (FAR FIELD NOISE (2800 RPM
 ((BAR PRESS = .760 M HG
 ((REL HUMID = 70 %
 ((METEOROLOGY:
 ((RUN 03
 (TEST 75-002-001
 (OMEGA 1.4
 (IDENTIFICATION:
 (PAGE 16



ANGLE IN DEGREES

FIGURE: SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
63 HZ OCTAVE BAND

11

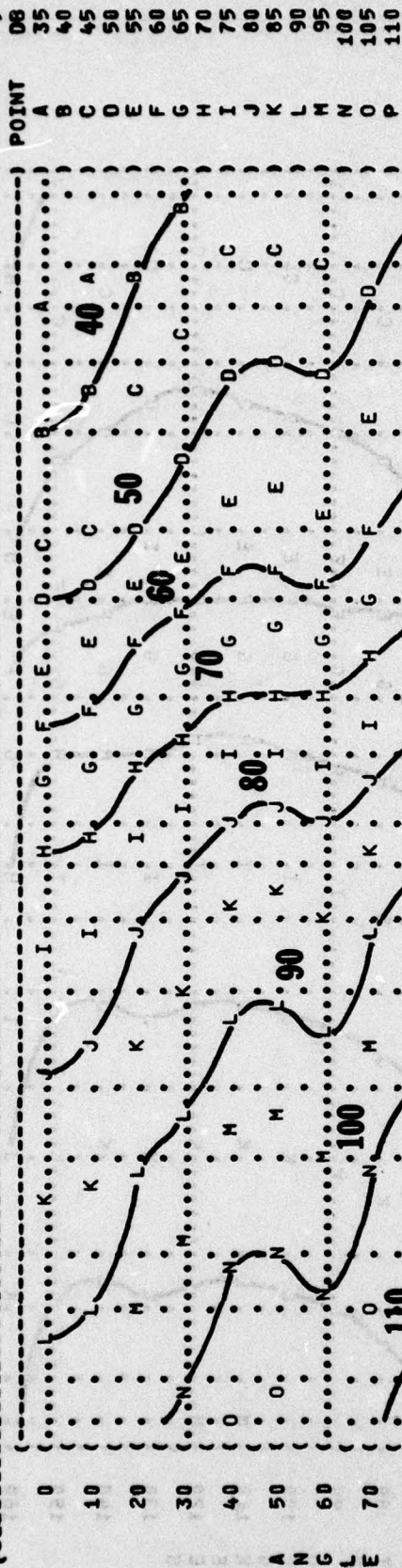
NOISE SOURCE/SUBJECT:
(A-1E AIRCRAFT
(R-3350-26MD ENGINE
(FAR FIELD NOISE

OPERATION:
(
(MILITARY POWER
(2800 RPM

METEOROLOGY:
(TEMP = 15 C
(BAR PRESS = .760 M HG
(REL HUMID = 70 %

IDENTIFICATION:
(
(OMEGA 1.4
(TEST 75-002-001
(RUN 03

PAGE 19



ANGLE IN DEGREES

FIGURE: SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
125 HZ OCTAVE BAND

11

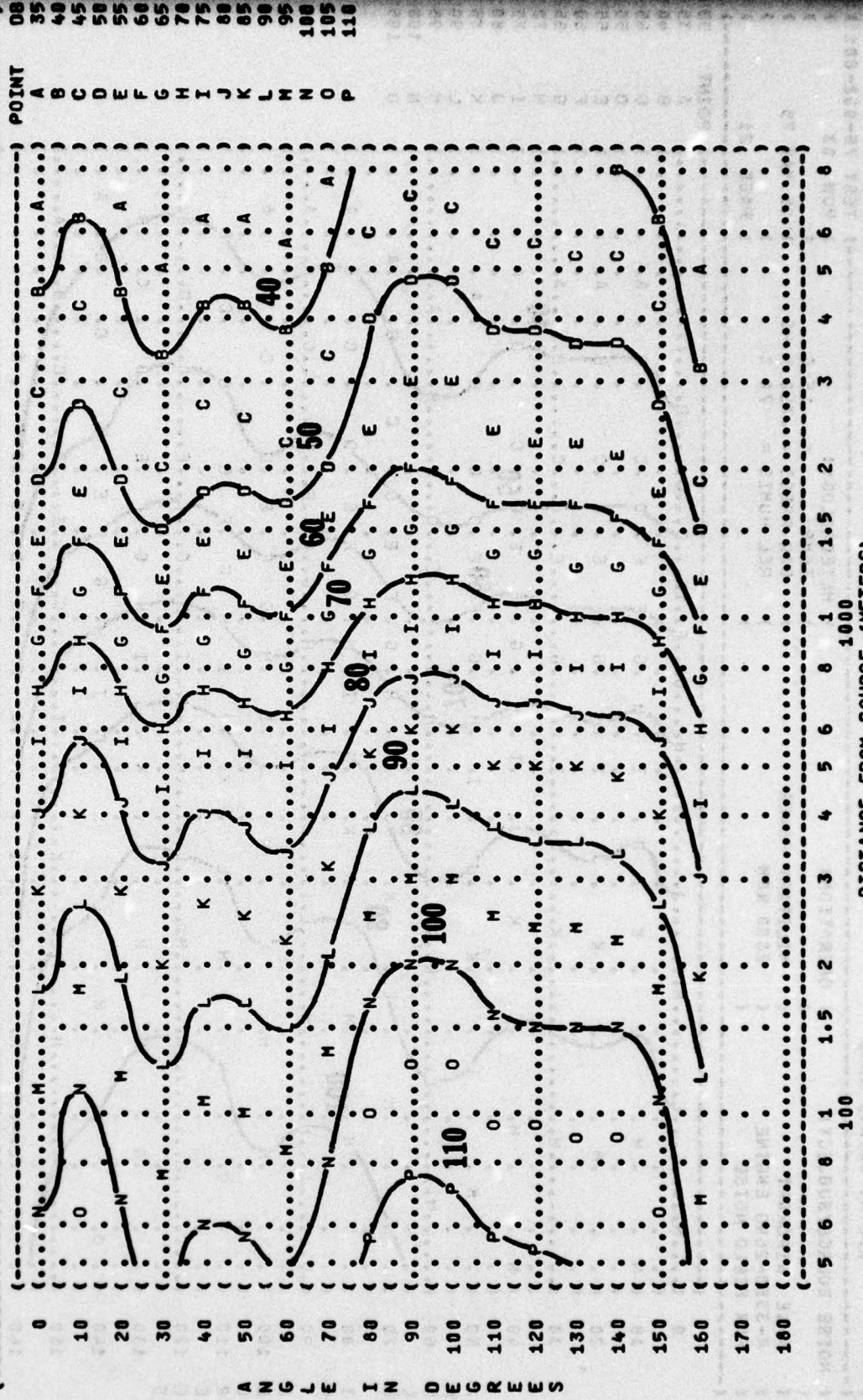
IDENTIFICATION:
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TEST 75-002-001

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

OPERATION:
MILITARY POWER
2800 RPM

NOISE SOURCE/SUBJECT:
A-1E AIRCRAFT
R-3350-26WD ENGINE
FAR FIELD NOISE

PAGE 20



DISTANCE FROM SOURCE (METERS)

FIGURE 11 SOUND PRESSURE LEVEL {SPL} EQUAL LEVEL CONTOURS (DB) 250 HZ OCTAVE BAND

IDENTIFICATIONS:
OMEGA 1.4
TEST 75-002-001

NOISE SOURCE/SUBJECT:

(OPERATION:

METEOROLOGY:

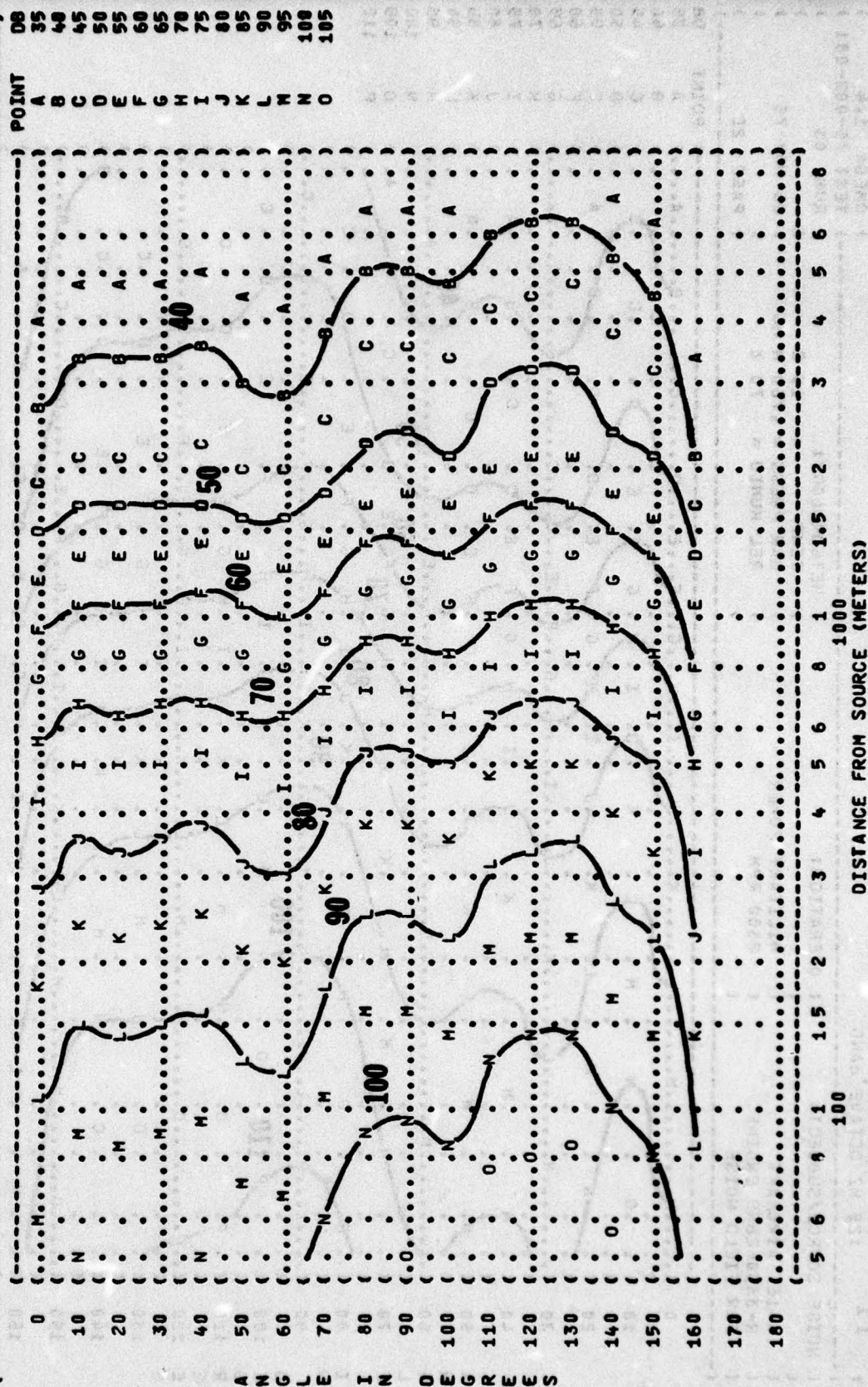
A-1E AIRCRAFT
R-3350-26WD ENGINE
FAR FIELD NOISE

(
(
(

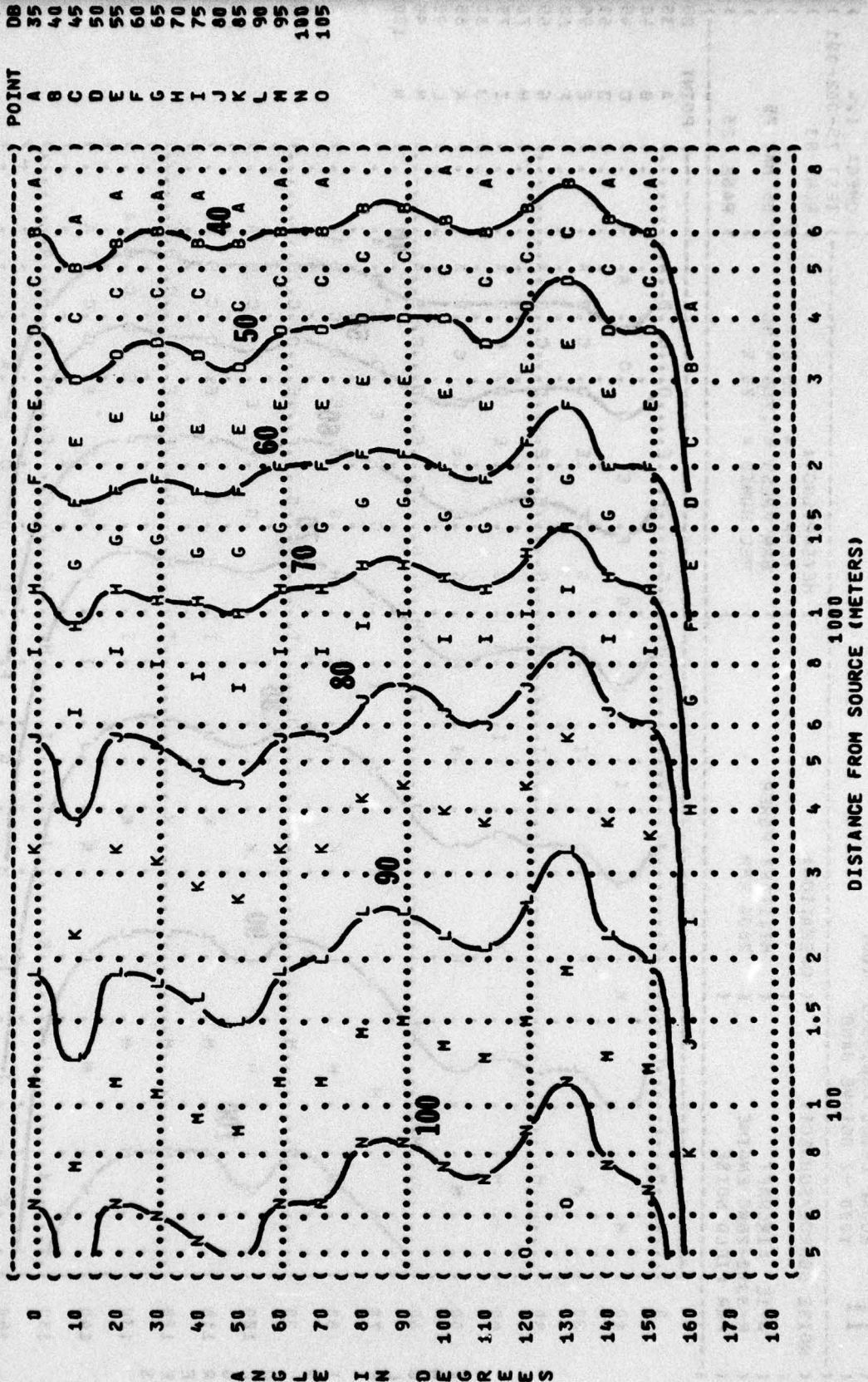
MILITARY POWER
2800 RPM

TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

PAGE 21



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (500 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (A-1E AIRCRAFT (MILITARY POWER
 (R-3350-26WD ENGINE (2800 RPM
 (FAR FIELD NOISE ()
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = .760 M HG
 () REL HUMID = 70 %
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST 75-002-001
 () RUN 03
 () 05 MAY 75
 () PAGE 22



IDENTIFICATIONS

OMEGA 1.4

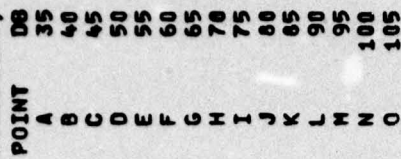
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(OPERATIONS:

METEOROLOGY:
TEMP
BAR PRESS
REL HUMID

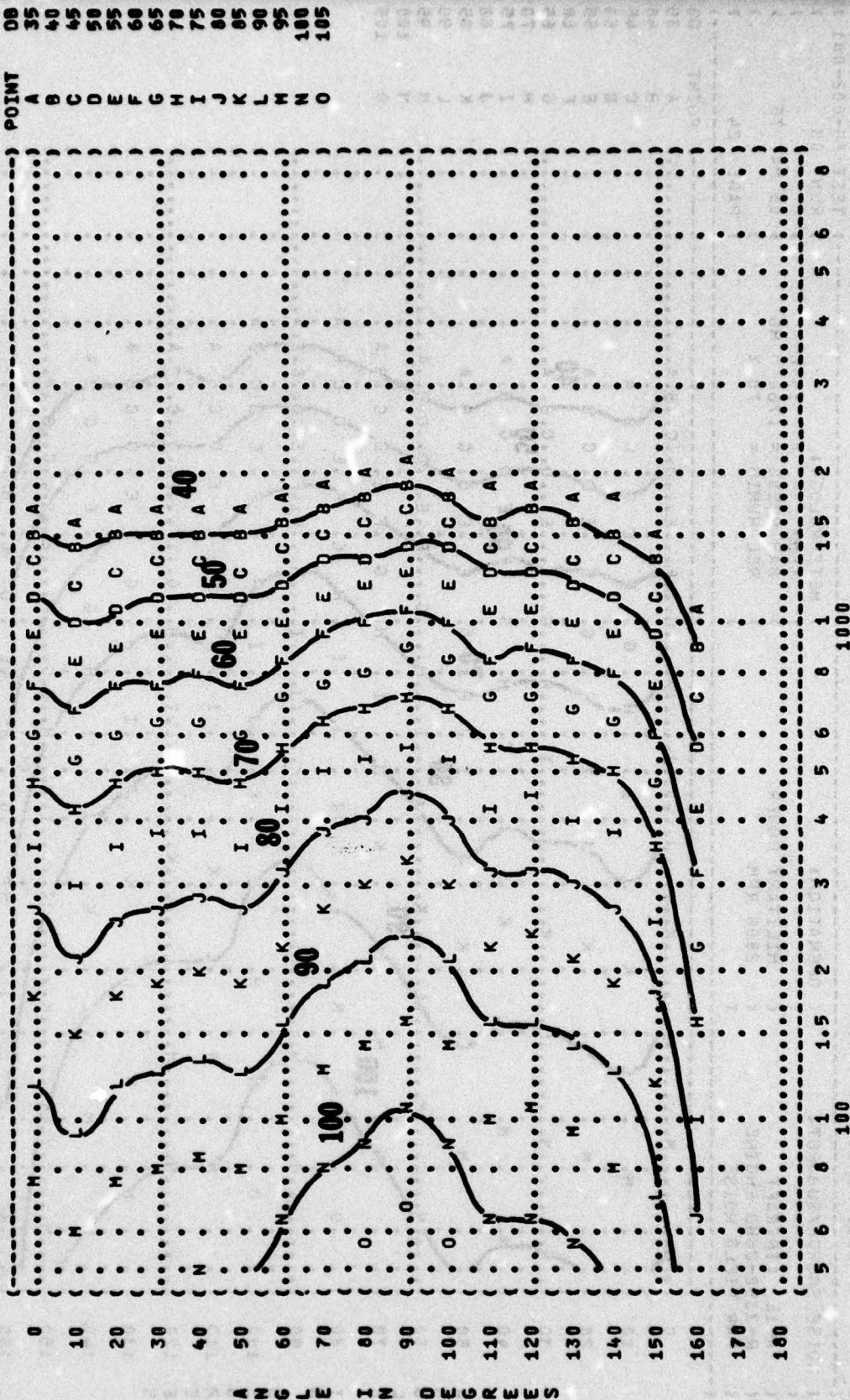
05 MAY 75

PAGE 24



ANGUS IN DEGREE

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (4000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (A-1E AIRCRAFT (MILITARY POWER
 (R-3350-26WD ENGINE (2800 RPM
 (FAR FIELD NOISE ()
 () METEOROLOGY:)
 () TEMP = 15 C
 () BAR PRESS = .760 M HG
 () REL HUMID = 70 %
 () PAGE 25
 (IDENTIFICATION:)
 () OMEGA 1.4
 () TEST 75-002-001
 () RUN 03
 () 05 MAY 75



DISTANCE FROM SOURCE (METERS)

